Newsletter N°11 on Insects for feed, food and bioconversion of organic substrates

Items published between 01 August and 31 October 2024

This newsletter is produced by a research team on entomoconversion and the “Direction pour la Science Ouverte” (DipSO). It is the result of multi- source monitoring (media, articles, ...).

Scope :

- **Europe/France**
- **Thematics axes** : insects (Tenebrio molitor et Hermetia Illucens) , substrates (organic waste, by-products, ...), industrials applications and products (frass, fertilizer, ...)
- **Sources** : articles, information on ongoing and completed projects, regulatory documents, calls for expressions of interest, private sector activities.

Note : Items in this newsletter do not represent INRAE's position.

Call for proposals, call for tenders, congress

Sources: ANR, Horizon Europe, BPI...

31/10/2024

8th International Entomophagous Insects Conference - July 2025 - Tours, France

The 8th International Entomophagous Insects Conference (IEIC) will be held in Tours, France, from 1 to 4 July 2025. This biennial conference aims to bring together scientists from around the world to share and disseminate information and new discoveries on the biology of parasitoids and predators of insects. Topics include behaviour, evolution, physiology, chemical ecology, genetics/genomics, systematics, population, community and landscape ecology, biological control and integrated pest management, biodiversity and conservation biology. ...

ieic2025.sciencesconf.org

31/10/2024

CALL FOR ABSTRACTS - INSECTS PLUS International Congress - May 2025 - Germany

The Insects Plus 2025 International Congress invites researchers, industry experts, start-ups, and innovators to submit their abstracts for presentation at this landmark event. As the premier platform dedicated to the cultivation and processing of alternative biomass for food, feed, and special applications, the congress offers a unique opportunity to showcase your work in front of a global audience.

www.insects.plus

Substrate - media

Sources : mainstream media, regulatory sources, institutionnal, company,..

18/10/2024

Breakthrough Victoria invests in insect protein manufacturing to reduce food waste

Breakthrough Victoria announced an investment of $2.5 million in Viridian Renewable Technology Pty Ltd, a Melbourne-based company that is tackling food waste and fostering a circular economy through sustainable insect protein manufacturing. The post Breakthrough Victoria invests in insect protein manufacturing to reduce food waste appeared first on Australian Manufacturing.

www.australianmanufacturing.com.au

29/09/2024

Hong Kong start-up flies in the face of food waste using insects to create compost

While travelling in Japan, Hongkonger Rosie Chan decided to work on a local farm to fund her stay. There, she realised that nothing was considered waste – everything could return to the soil.“I saw that many things could be reused, especially natural materials like bamboo and wood. Even when these materials wear out, they can be repaired, and when they can’t be fixed any more, there are ways to return them to nature,” said Chan, ...

www.scmp.com

hermetia illucens

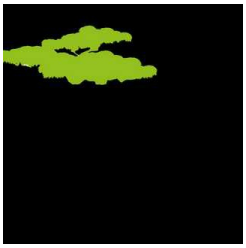
15/08/2024

Insect protein is taking flight in the UK — fed on food waste from restaurants and supermarkets

There are no cows or chickens down on Entocycle’s farm; it focuses on an altogether different category of livestock – insects. The business, which was launched in 2016, is now at the forefront of the UK’s growing insect farming sector. ... “Everyone goes to black soldier fly larvae. They are the fastest producers, the most hardy and they can eat the widest range of food,” says [Entocycle founder and chief executive Keiran] Whitaker. The ...

geneticliteracyproject.org

hermetia illucens



12/08/2024

MTI Investment: Chanzi Expands Operations, Scaling Insect Farming and Waste Management in East...

Dar es Salaam, Tanzania - MTI Investment AB (ticker: MTI) ("MTI" or the "Company") is excited to ... facilities in Kenya and additional sites in Tanzania. These expansions have significantly increased Chanzi's waste...

news.bequoted.com

hermetia illucens

12/08/2024

Des chercheurs veulent utiliser des insectes pour composter les déchets dangereux en matière utile - NeozOne

Et, si les mouches soldats noires devenaient nos meilleures alliées dans la lutte contre les déchets toxiques ? Découvrez comment ces insectes pourraient transformer nos poubelles en ressources précieuses.

www.neozone.org

08/08/2024

Hotel in Australia manages food waste using insects

Hyatt Regency Sydney, one of the largest hotels of Australia, has implemented Goterra food waste management system. The system utilises Black Soldier Fly larvae to break down food waste onsite rapidly. In an industry-leading move, Hyatt Regency Sydney, one of Australia's largest hotels, has become the first hotel in the world to implement Goterra's compact [...] Hotel in Australia manages food waste using insects yazısı ilk önce ...

www.feedandadditive.com

hermetia illucens

Substrate - articles

Sources : HAL, Pubmed, BASE, MDPI, F100Research, Jounal of Insects as Food and Feed, ...

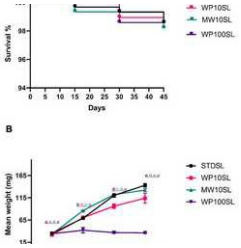
31/10/2024

Black soldier fly larvae (Hermetia illucens) do not bioaccumulate ferulic and caffeic acids from wheat bran - Papin et al.

Abstract As recently shown, black soldier fly larvae (BSFL) are capable of bioaccumulating high concentrations of vitamin E and carotenoids, but the potential bioaccumulation of polyphenols remains unknown. Wheat bran (WB), a common breeding substrate for BSFL, is particularly rich in ferulic acid (FA) and also contains caffeic acid (CA). Numerous studies suggest that these polyphenols have beneficial effects on human and animal ...

brill.com

hermetia illucens



29/10/2024

Upcycling Milk Industry Byproducts into Tenebrio molitor Larvae: Investigation on Fat, Protein, and Sugar Composition - Brai et al.

Edible insects represent a growing sector of the food industry and have a low carbon footprint. Noteworthy, insects can upcycle different leftovers and byproducts into high-quality nutrients. Herein, the larvae of the edible insect Tenebrio molitor (TML) were fed using local milk industry byproducts. Mozzarella whey and whey permeate obtained in cheese production were used to formulate three alternative diets. Both byproducts are ...

www.mdpi.com

tenebrio molitor

25/10/2024

A preliminary study on the degradation of AFB1 by Tenebrio molitor, Rhizopus oryzae and Trichoderma reesei - Daniso et al.

Abstract Recently, genus Aspergillus, a fungus capable of producing aflatoxins, secondary highly toxic metabolites, has spread to new areas. These areas became suitable habitats due to the recent climate changes. The use of aflatoxin-contaminated crops is a cause of great concern in guaranteeing food safety and is responsible for major economic losses along the supply chain. For this reason, several strategies have been investigated ...

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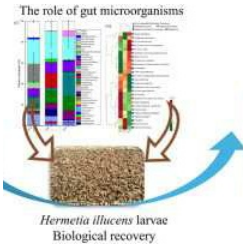
tenebrio molitor



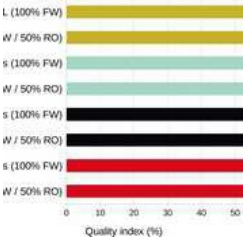
23/10/2024

A new approach to biotransformation and value of kitchen waste oil driven by gut microorganisms in Hermetia illucens - Wang et al.

Hermetia illucens larvae are known for their ability to recycle organic waste, but their capacity to recover waste oils and the role of gut microorgan...

www.sciencedirect.com

hermetia illucens



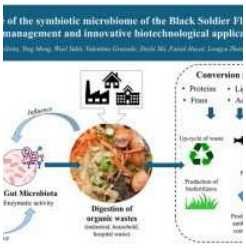
23/10/2024

Invertebrate composting quality of the invasive alga Rugulopteryx okamurae, prospects for its bio-recycling, management and circular economy - Paton et al.

In recent decades, the invasive seaweed Rugulopteryx okamurae has had a huge environmental impact on marine biodiversity, fisheries, GHG emissions and public health along much of the Iberian Peninsula and islands coastline. Due to the enormous amount of algae biomass that is expelled to the beaches where it slowly rots, some circular economy business initiatives, such as composting, are emerging. In the present study, we compared ...

journals.plos.org

hermetia illucens tenebrio molitor



22/10/2024

Exploring the role of the microbiome of the H. illucens (black soldier fly) for microbial synergy in optimizing black soldier fly rearing and subsequent applications - Salam et al.

The symbiotic microbiome in the insect's gut is vital to the host insect's development, improvement of health, resistance to disease, and adaptability...

www.sciencedirect.com

hermetia illucens

18/10/2024

Rearing fly larvae on various substrates: nutrient composition of larvae and frass - Klakankhai et al.

Abstract. Management solutions for waste in southern Thailand, such as fly larvae, are tested in a laboratory using different substrates and wastes from th

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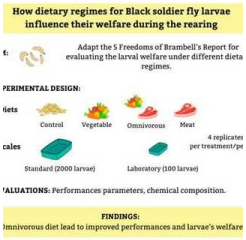

18/10/2024

A First Step Towards Black Soldier Fly Larvae (Diptera: Stratiomyidae) Welfare by Considering Dietary Regimes (Part I) - Cattaneo et al.

The insect farming sector is expanding, but knowledge of insect welfare is still limited. This article aims to optimize the dietary regime for “black soldier fly” (Hermetia illucens L., BSF) larvae by applying a holistic view of welfare. Four diets were tested: control (CONTR, commercial laying hen feed), vegetable (VEG), omnivorous (OMN), and carnivorous (MEAT) diet, conducting experiments at a large (2000 larvae) and small scale …

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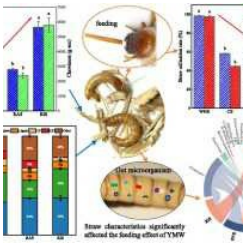
hermetia illucens



12/10/2024

Effects of straw structure and component on feeding efficiency of yellow mealworm for insect protein production - Chen et al.

Elucidating the influence of straw structure and component on the feeding efficacy of yellow mealworm is pivotal for improving insect protein producti…

www.sciencedirect.com

tenebrio molitor

10/10/2024

Enhancing black soldier fly larval production from sugarcane bagasse through hydrothermal, enzymatic, and microbial treatment - Bothma et al.

Abstract In response to the urgent demand for environmentally responsible waste management alternatives, insects such as the black soldier fly (BSF) could be cultivated for the bioconversion of rich organic waste into biomass contents rich in fat and protein. Agricultural residues such as sugarcane bagasse is a renewable biomass source that has the potential to augment the inadequate quantity of suitable organic wastes currently …

brill.com

hermetia illucens

09/10/2024

Upcycling lignocellulosic palm biomass via Black Soldier Fly Larvae (BSFL) composting incorporated with Ex-situ fermentation by Bacillus Subtilis - Yeow et al.

The growing demand of palm oil has caused expanding deforestation- one of the root causes for global warming. Drawn from the recent Conferences of the…

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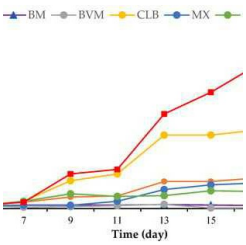
hermetia illucens



06/10/2024

Comparison of Growth and Composition of Black Soldier Fly (Hermetia illucens L.) Larvae Reared on Sugarcane By-Products and Other Substrates - Zandi-Sohani et al.

Black soldier fly larvae (BSFL) can convert organic waste into high-quality biomass. In this study, we tested the potential of sugarcane by-products as a food source for BSFL and compared larval development and nutritional value with some other organic substrates. Seven different substrates were used, including carrot pomace (C), carrot pomace and leftover bread (CB) (50/50), bagasse and vinasse (BV), bagasse and molasses (BM), …

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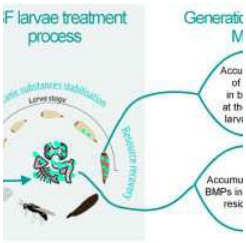
hermetia illucens



04/10/2024

Treatment of biowaste commingled with biodegradable bioplastic films using Black Soldier Fly larvae: Generation and fate of micro-plastics - Grossule et al.

The use of Black Soldier Fly (BSF) larvae is emerging as a promising alternative for biowaste (i.e. food waste) treatment, generating larval biomass a...

www.sciencedirect.com

hermetia illucens

01/10/2024

Transcriptomic response of Hermetia illucens L. (Diptera: Stratiomyidae) to wounding and Gram-negative bacterial infection - Shah et al.

Abstract The larvae of the black soldier fly (BSFL), Hermetia illucens L. (Diptera: Stratiomyidae), are of economic interest due to their use as livestock feed component. Unraveling their response to a bacterial infection will allow us to gain a better insight into their biology. In the current study, we used RNA-Seq analysis to unravel the transcriptomic response of BSFL to wounding and infection by a Gram-negative bacterium, ...

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hermetia illucens

30/09/2024

A comprehensive analysis of coffee silverskin bioconversion by Hermetia illucens larvae - De Filippis et al.

Abstract Coffee silverskin, the outer layer of the green coffee bean, represents a major by-product of the coffee industry derived from the roasting process. In recent years the development of sustainable and circular strategies to manage and valorise organic wastes and by-products has become increasingly relevant and the potential of coffee silverskin in food industry, cosmetics, and bioconversion applications is gaining attention. ...

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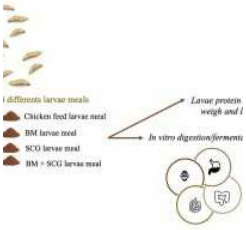
hermetia illucens



27/09/2024

Improved nutritional and antioxidant properties of black soldier fly larvae reared on spent coffee grounds and blood meal by-products - Navajas-Porras et al.

Black Soldier Fly larvae (BSFL) are a promising and sustainable alternative to obtain proteins. Due to their high growth rate and ability to use diffe...

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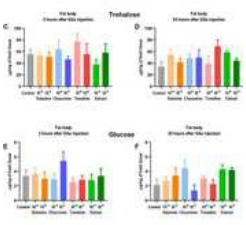
hermetia illucens



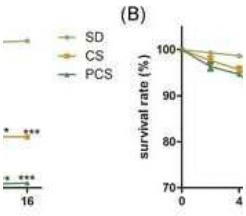
25/09/2024

A tomato a day keeps the beetle away – the impact of Solanaceae glycoalkaloids on energy management in the mealworm Tenebrio molitor - Winkiel et al.

Solanine (SOL), chaconine (CHA), and tomatine (TOM) are plant secondary metabolites produced mainly by the species of Solanaceae family, such as tomato Solanum lycopersicum L. These glycoalkaloids (GAs) have a wide range of biological activity, also in insects. However, their mechanisms of action are not precisely understood. The purpose of the study was to investigate how pure GAs and tomato leaf extract (EXT) affect glycolysis, ...

link.springer.com

tenebrio molitor



24/09/2024

Rearing of Black Soldier Fly Larvae with Corn Straw and the Assistance of Gut Microorganisms in Digesting Corn Straw - Wang et al.

Corn straw is considered a renewable biomass energy source, and its unreasonable disposal leads to resource waste and environmental pollution. Black soldier fly (Hermetia illucens L.) larvae (BSFL) facilitate the bioconversion of various types of organic wastes. In this study, we found that 88% of BSFL survived, and 37.4% of corn straw was digested after 14 days of feeding with corn straw. Contrary to expectations, the pretreatment ...

www.mdpi.com

hermetia illucens

24/09/2024

Novel Feruloyl Esterase for the Degradation of Polyethylene Terephthalate (PET) Screened from the Gut Microbiome of Plastic-Degrading Mealworms (Tenebrio Molitor Larvae) - Mamtimin et al.

Mealworms (Tenebrio molitor) larvae can degrade both plastics and lignocellulose through synergistic biological activities of their gut microbiota because they share similarities in chemical and physical properties. Here, a total of 428 genes encoding lignocellulose-degrading enzymes were screened from the gut microbiome of T. molitor larvae to identify poly(ethylene terephthalate) (PET)-degrading activities. Five genes were successfully expressed in E. coli, among which a feruloyl esterase-like enzyme named TmFae-PETase demonstrated the ...

pubs.acs.org

tenebrio molitor

19/09/2024

Sustainable chromium ore processing residue (COPR) waste treatment with black soldier fly larvae (BSFL) - Tiew

Chromium elements are prevalent in daily life, and millions of tonnes of Chromium Ore Processing Residue (COPR) remain untreated in China, posing sign...

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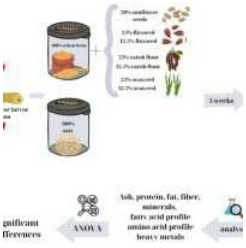
hermetia illucens



19/09/2024

Study of the effect of feeding Tenebrio molitor larvae during their rearing on their growth, nutritional profile, value and safety of the produced flour - Papastavropoulou et al.

Science and food industry must strive to ensure and improve edible insect's benefits, and especially their safety and nutritional value. This study in...

www.sciencedirect.com

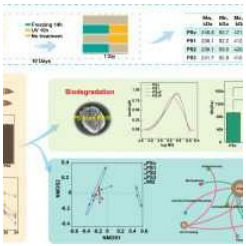
tenebrio molitor

10/09/2024

Alleviating heavy metal accumulation and pathogens' abundance through processing proper ratio of duck feces and food waste by Black solider fly larvae - Pan et al.

The efficient and sustainable utilization of duck feces is critically essential in China, given its expansive livestock and poultry breeding industry. While the use of black solider fly (BSF) larva...

www.tandfonline.com



10/09/2024

Effects of plastic aging on biodegradation of polystyrene by Tenebrio molitor larvae: Insights into gut microbiome and bacterial metabolism - Ding et al.

Plastics aging reduces resistance to microbial degradation. Plastivore Tenebrio molitor rapidly biodegrades polystyrene (PS, size: < 80 μm), but the e...

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tenebrio molitor

10/09/2024

Amylase activity across black soldier fly larvae development and feeding substrates: insights on starch digestibility and external digestion - Guillaume et al.

Black soldier fly larvae (BSFL ; Hermetia illucens) hold promise for converting biowaste into proteins and lipids for feed. Dietary starch is efficien...

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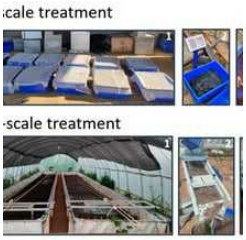
hermetia illucens



09/09/2024

Fatty Acid Bioconversion and Scaling-Up Effects of Swine Manure Treatment with Black Soldier Fly Larvae - Shen et al.

Black soldier fly larvae (BSFL) treatment offers a promising avenue for manure valorization. However, there is a lack of larval density studies and ton-scale exploration in swine manure bioconversion. This study delves into the efficiency of larval fatty acid (FA) bioconversion, examining the impact of larval density on a kilogram scale and extending the analysis to a ton scale. Across a range of 50 to 600 larvae/kg, the larval ...

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hermetia illucens

06/09/2024

Effect of seasonality and pretreatment of the organic fraction of municipal solid waste for black soldier fly larvae production - Jucker et al.

Abstract This study investigated the potential of using the organic fraction of municipal solid waste (OFMSW) as a rearing substrate for black soldier fly larvae (BSF). Samples of OFSMW were collected in Italy in four different seasons of the year and fed untreated or pulped to the larvae. The larvae successfully grew on OFMSW with minimal impact from either season or pretreatment (pulped vs untreated). Notably, all treatments ...

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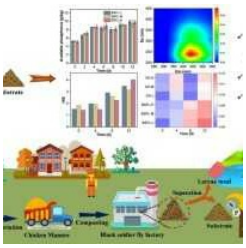
hermetia illucens



31/08/2024

Unraveling the role of black soldier fly larvae in chicken manure conversion: Facilitating maturation and enhancing humification - Cai et al.

Black soldier fly larvae (BSFL) have garnered considerable attention for their efficacy in mitigating waste management challenges. However, their pote...

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hermetia illucens

31/08/2024

Impacts of industrial food wastes on nutritional value of mealworm (Tenebrio molitor) and its gut microbiota community shift - Yu et al.

The extensive investigation into the capacity of mealworms to digest diverse food by-products, as well as plastic wastes, has been a focal point in re...

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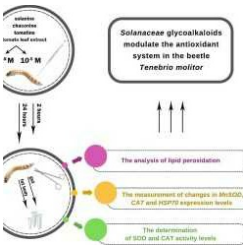
tenebrio molitor



30/08/2024

Modulation of the antioxidant system by glycoalkaloids in the beetle Tenebrio molitor L. - Winkiel et al.

Various factors may affect the antioxidative system in insects, including xenobiotics. Glycoalkaloids (GAs) are plant secondary metabolites produced m...

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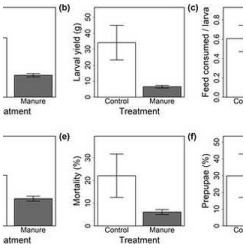
tenebrio molitor



28/08/2024

Black soldier fly (Diptera: Stratiomyidae) larvae reduce cyathostomin (Nematoda: Strongylidae) eggs but develop poorly on horse manure - Mann et al.

Abstract. Cyathostomins are common digestive tract parasites of grazing horses that spread through contact with horse feces. Horse feces are colonized by a

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hermetia illucens

28/08/2024

Parasitoids of the black soldier fly (Hermetia illucens) – a minor problem or the tip of the iceberg? - Rojo

Abstract An overview of parasitoid species found on the black soldier fly is presented. The future significance of these natural enemies remains uncertain. However, a thorough assessment of their impact on black soldier fly farms worldwide is essential. The initial step involves the taxonomic identification and study of the life cycles of the species involved.

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hermetia illucens

26/08/2024

Is there any relationship between the effectiveness of some Heterorhabditis bacteriophora isolates on the host and their average penetration rate? - Susurluk et al.

Entomopathogenic nematodes, such as Heterorhabditis bacteriophora, have been widely recognized for their potential in biological control strategies to...

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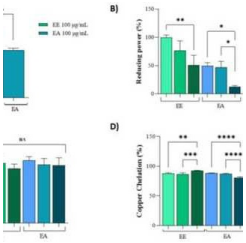
tenebrio molitor



23/08/2024

Prospecting of the Antioxidant Activity from Extracts Obtained from Chañar (Geoffroea decorticans) Seeds Evaluated In Vitro and In Vivo Using the Tenebrio molitor Model - Pereira Silva et al.

Geoffroea decorticans, commonly known as Chañar, is a native Chilean plant widely used in folk medicine for its expectorant, pain relief, and antinociceptive properties. This study explored the antioxidant, cytotoxic, and protective effects of its ethanolic (EE) and aqueous (EA) seed extracts against oxidative stress induced by copper sulfate, using both in vitro and in vivo approaches. Phytochemical analyses revealed the presence ...

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tenebrio molitor

22/08/2024

A Treatment for Rice Straw and Its Use for Mealworm (Tenebrio molitor L.) Feeding: Effect on Insect Performance and Diet Digestibility - Saura-Martínez et al.

The development of reuse processes for plant by-products for both animal and human food offers numerous possibilities for quality-of-life improvements that align with a circular economy model. For this reason, we divided this study into two experiments. First, we designed a combined treatment consisting of laccase, ultrasound, and ascorbic acid to hydrolyze rice straw plant fibers and used the resulting feed as the basis for T. molitor diets. Second, we formulated diets with different inclusion levels (0%, 25%, 50%, 75%, and 100%) of rice ...

www.mdpi.com

tenebrio molitor

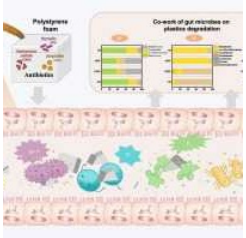
21/08/2024

Use of rice by-products for production of the Tenebrio molitor larvae: emphasis on the fatty acid profile - Chamorro et al.

Abstract The objectives of this study were to assess the ability of Tenebrio molitor larvae to biotransform by-products from rice processing enriched with 1% flaxseed oil into high-nutritional value food and to obtain oil from T. molitor larvae with a fatty acid profile suitable for future application in animal nutrition. Larvae of T. molitor were cultured on seven experimental diets, including four diets composed of rice processing ...

brill.com

tenebrio molitor



15/08/2024

Contribution of gut microbiota to biodegradation of polystyrene in Tenebrio molitor larvae: Microbiome under antibiotic suppression of Gram-positive, Gram-negative, and fungal microbes - Wang et al.

The discovery of plastic biodegradation by insects such as Tenebrio molitor larvae has been well known, however, understanding of the roles of larval ...

www.sciencedirect.com

tenebrio molitor

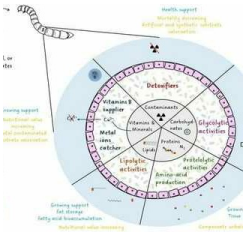
13/08/2024

Rapid Bioconversion of Animal Meat Waste into Compost Using Black Soldier Fly Larvae (Hermetia illucens): A More Sustainable Approach - Manyapu et al.

In Western diets, meat is the common item obtained from different sources such as poultry, seafood, pigs, goats, and sheep. The insidious animal meat waste from slaughterhouses and processed animal meat waste is a threat to the environment since it acts as a...

link.springer.com

hermetia illucens



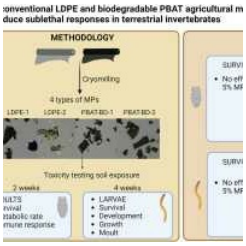
13/08/2024

Microorganism Contribution to Mass-Reared Edible Insects: Opportunities and Challenges - Carpentier et al.

The interest in edible insects' mass rearing has grown considerably in recent years, thereby highlighting the challenges of domesticating new animal species. Insects are being considered for use in the management of organic by-products from the agro-industry, synthetic by-products from the plastics industry including particular detoxification processes. The processes depend on the insect's digestive system which is based on two ...

www.mdpi.com

hermetia illucens tenebrio molitor



11/08/2024

Response of terrestrial crustacean Porcellio scaber and mealworm Tenebrio molitor to non-degradable and biodegradable fossil-based mulching film microplastics - Kokalj et al.

Agricultural mulching films are potential sources of microplastics (MPs) in soil. As an alternative to conventional non-degradable mulching films, a v...

www.sciencedirect.com

tenebrio molitor

06/08/2024

Effects of brewery by-products on growth performance, bioconversion efficiency, nutritional profile, and microbiota and mycobiota of black soldier fly larvae - Resconi et al.

Brewery by-products are recognised as suitable rearing substrates for Hermetia illucens, better known as black soldier fly (BSF) but information about...

www.sciencedirect.com

hermetia illucens

05/08/2024

Larval diet impacts black soldier fly (Diptera: Stratiomyidae) thermal tolerance and preference - Li et al.

Thermal tolerance and preference are key parameters impacting agricultural production systems. Results in this study reveal that black soldier fly thermal tolerance and preference were impacted by th...

onlinelibrary.wiley.com

hermetia illucens

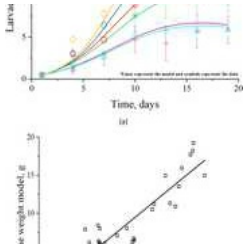
05/08/2024

Leftover bread as a potential feed additive: Impact on growth, fatty acid content, and antioxidant properties in Tenebrio molitor larvae - Al-Mekhlafi et al.

Bread waste in Saudi Arabia is a significant environmental issue that has caused significant losses. Insects, specifically Tenebrio molitor larvae, of...

www.sciencedirect.com

tenebrio molitor



01/08/2024

Revalidation of Growth Kinetics Model of Black Soldier Fly Larvae (Hermetia illucens) with Fish Industrial Waste Substrate and Its Utilization - Prasetya et al.

The interest in black soldier fly larvae (Hermetia illucens) has grown significantly due to their substantial bio-conversion capabilities, high nutritional content, and diverse product applications. They are now considered breakthrough solutions in waste management systems, particularly for organic matter. However, the timing of optimal maggot weight harvest in black soldier fly larvae cultivation is often overlooked. In Indonesia, ...

link.springer.com

hermetia illucens

Product - media

Sources : mainstream media, regulatory sources, institutionnal, company,..

30/10/2024

Here’s 7 takes on edible insects in S’pore, from cricket protein bars to mealworm margaritas

Here are 7 businesses that offer edible insect products in the form of food and drinks around Singapore, after approval from the SFA.

vulcanpost.com

25/10/2024

BioCric: The Science-Backed Startup Leveraging Research and Development to Produce Sustainable Insect Protein

... ’s National Center for Food Science and Technology and were inspired ... product, even one backed by science, is no guarantee of success ...

science.einnews.com

20/10/2024

Pembrokeshire County Council confirms no plans for insect protein rollout in schools

PEMBROKESHIRE will not be ‘rolling out’ VEXo insect protein ‘mince’ for school dinner menus in the county, councillors heard yesterday, October 17. The post Pembrokeshire County Council confirms no plans for insect protein rollout in schools appeared first on Herald.Wales.

www.herald.wales

18/10/2024

Reploid: Revolutionizing insect protein production

By feeding the larvae EU-approved materials that border on organic waste, Reploid taps into the remarkable sustainability of BSF larvae. These larvae thrive on low-value, waste-like but approved feed streams, transforming them into high-quality, eco-friendly products. REPLOID, born from the merger of three top European BSF producers (madebymade, Nutrifly, Insektianer), is revolutionizing sustainable agriculture with [...] Reploid: ...

www.feedandadditive.com

hermetia illucens

18/10/2024

Novel Protein Sources: Impact of insect protein meals on pet food palatability

Insects have unique flavor profiles that can vary significantly between species. For instance, crickets have a nutty taste, while mealworms can be more neutral. These flavors can be both an advantage and a challenge when formulating palatable pet foods. The impact of insect protein on pet food palatability is a critical factor that manufacturers are [...] Novel Protein Sources: Impact of insect protein meals on pet food palatability ...

www.feedandadditive.com

hermetia illucens tenebrio molitor

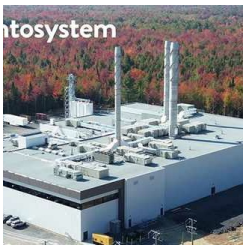
18/10/2024

Breakthrough Vic invests $2.5m in insect protein pioneer, Viridian - Food & Drink Business

Breakthrough Victoria has invested $2.4 million in the Australian company pioneering sustainable insect protein manufacturing, Viridian Renewable Technology. The money will increase factory capacity a...

www.foodanddrinkbusiness.com.au

hermetia illucens



16/10/2024

Insect protein producer secures an investment of $58 million

Canada-based insect protein producer Entosystem has secured an investment of $58 million to accelerate the growth of and support the development of a second commercial plant. The plant's development reportedly represents a key step in meeting the increasing demand for sustainable proteins and organic fertilizers. Idealist Capital, Sanimax and Fondaction have announced their $58 million [...] Insect protein producer secures an investment ...

www.feedandadditive.com

25/09/2024

Insect meal no longer niche but cost concerns linger

The emerging sector is expected to see a substantial increase in production capacity, with an estimated 200,000t of insect meal coming to market in the next three to four years

www.undercurrentnews.com

25/09/2024

Extraction method could tailor insect protein benefits | Feed & Grain

Study intended to identify the best process for extracting insect protein found that several could have a place in animal nutrition.

www.feedandgrain.com

24/09/2024

Aquafeed.com | Insect protein enhances trout immunity performance and lowers mortality

South African insect company Maltento tested its high protein digest product in rainbow trout obtaining enhanced performance.

www.aquafeed.com

hermetia illucens

24/09/2024

Aquafeed.com | Arthro Biotech becomes first Indian BSF insect protein producer with EU TRACES certification

The company is producing BSF-based protein and other products such biopesticides and aims to produce 5,000 tons per year with a new facility.

www.aquafeed.com

hermetia illucens

19/09/2024

Loopworm poised to export insect protein to Europe

Loopworm, which farms and processes insects for uses including aquafeeds, has announced that it has successfully secured ISO 22000, GMP+, and HACCP certifications for its 6,000 tonne capacity insect protein production unit in Bangalore.

thefishsite.com

04/09/2024

Zimbabwe explores potential of insect larvae as feed ingredients

With the aim to boost supplies of feed protein for rural poultry sustainably, a new project in the southern African state has been initiated to produce insect larvae.

www.feedstrategy.com

04/09/2024

Shrimp fed diet including Protix insect meal, Veramaris algal oil being sold at Dutch retailer Albert Heijn

Dutch retail chain Albert Heijn has begun stocking farmed shrimp fed on a diet that includes insect meal created by Protix and algal oil from Veramaris.The debut is the result of a collaboration between Protix, Veramaris, Ecuadorian shrimp-farming firm Cofimar, feed-maker Skretting, and shrimp importer Klaas Puul begun in 2023.“Albert Heijn is setting a new standard for sustainable seafood in the Netherlands. They are the first ...

www.seafoodsource.com

29/08/2024

Farmchemie launches commercial insect meal farm in Sri Lanka

In rows of stacked trays in an old poultry cage lies Sri Lakan feed additive company Farmchemie's newest feed protein. Black Solder Flies, The post Farmchemie launches commercial insect meal farm in Sri Lanka appeared first on Asian Agribiz.

www.asian-agribiz.com

27/08/2024

New partnerships in the study of insect-based feed

Dr. Rebecca Lochmann, a professor of aquaculture and fisheries at the University of Arkansas at Pine Bluff (UAPB), is leading a research project aimed at improving the sustainability of hybrid striped bass production.

thefishsite.com

hermetia illucens

05/08/2024

Insects could be the future of animal feed - CBC.ca

Insects could be the future of animal feed CBC.ca

consent.google.com

02/08/2024

Beyond The Headlines: Bühler launches insect protein center, FAO-EU food security deal

02 Aug 2024 --- This week in industry news, Bühler unveiled an insect production center in North America and the FAO collaborated with the EU to enhance resilience and food security in Eastern Africa. Meanwhile, dsm-firmenich highlighted mycotoxin risks in agriculture and Juicy Marbles launched plant-based ribs.

www.foodingredientsfirst.com

hermetia illucens

02/08/2024

Nasekomo upgrades neonate tech to boost insect protein production

Nasekomo has enhanced its neonate delivery service for Black Soldier Fly (BSF) larvae by introducing a suspension technology that is designed to improve the efficiency and reliability of insect-based protein production.

www.feednavigator.com

hermetia illucens

Product - articles

Sources : HAL, Pubmed, BASE, MDPI, F100Research, Jounal of Insects as Food and Feed, ...

30/10/2024

Method for Obtaining High-Energy Feed Protein and Fat from Insects - Maltseva et al.

Insects are a valuable and renewable source of feed and food protein and fat. They have an amino acid composition similar to that of fishmeal and meat, and can serve as a worthy replacement for them. The aim of this study was to substantiate the technological parameters of the process of obtaining fat from the Hermetia illucens larvae by a mechanical method on a screw press. A laboratory screw press was used for this research. ...

www.mdpi.com

hermetia illucens

30/10/2024

Partial or complete replacement of soybean meal with black soldier fly larvae meal improves feed efficiency in laying hens between 22 to 30 weeks of age - Veldkamp et al.

Abstract The European Commission recently authorised the inclusion of insect meal in poultry feed. Black soldier fly larvae meal (BSF) has comparable nutritional value to soybean meal (SBM) and higher calcium content, making it an attractive alternative protein source for laying hens While a few studies have explored this objective, inconsistent results have been reported, likely due to variations in hen age, breed, husbandry systems, ...

brill.com

hermetia illucens

29/10/2024

Dietary full-fat or defatted black soldier fly larvae can replace protein sources with no detrimental effect on growth performance or intestinal health of nursery pigs - Song et al.

Abstract. This work aimed to determine the effects of dietary full-fat or defatted black soldier fly larvae (BSFL) to replace protein sources on growth per

academic.oup.com

hermetia illucens

29/10/2024

Consumer sensory profiling and liking of Bolognese-type sauces: how do insect and plant foods really fare against red meat? - Almeida Costa et al.

Abstract Meeting global targets for healthier and more sustainable diets calls for a substantial reduction of meat consumption in Western nations, especially red and processed meat. This requires a transition to the large-scale production, marketing, and adoption of alternative proteins. The current state of development of new plant- and insect-based foods holds good promise, but optimizing their sensory quality to the point where ...

brill.com

tenebrio molitor

29/10/2024

Dielectric drying of black soldier fly larvae (Hermetia illucens): impact on microbiological product quality, safety and stability - Vandeweyer et al.

Abstract Along with the increasing scale of industrial production of insects as food and feed, the need for processing methods applicable on large scale is rising within the insect sector. One important processing technology in this context is drying, which aims at stabilising the quality of the insects. This study investigated the impact of dielectric drying technologies, specifically microwave (μW) and radio frequency (RF) drying, ...

brill.com

hermetia illucens

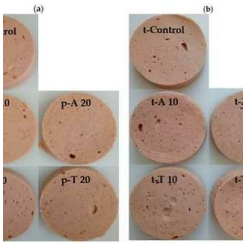
28/10/2024

Influence of different levels of black soldier fly larvae meal on growth performance and carcass quality of broiler chickens - Baderuddin et al.

A study was conducted to examine the impact of two inclusion levels of Black soldier fly larvae meal (BSFLM) replacing soybean meal on growth performa...

www.sciencedirect.com

hermetia illucens



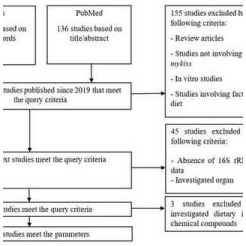
28/10/2024

Processing of Larvae of Alphitobius diaperinus and Tenebrio molitor in Cooked Sausages: Effects on Physicochemical, Microbiological, and Sensory Parameters - Lemke et al.

Proteins from insect production represent an interesting (environmentally friendly) option or supplement to commercial livestock farming. At present, however, the larval stages of T. molitor (mealworm) and A. diaperinus (buffalo worm) have been authorized as food for human consumption EU-wide, as have the nymph and adult stages of Locusta (L.) migratoria (Locusta migratoria, Linnaeus, 1758) and Acheta (A.) domesticus (house cricket, ...

www.mdpi.com

tenebrio molitor



26/10/2024

Alteration of the Intestinal Bacterial Community in Rainbow Trout (Oncorhynchus mykiss): The Role of Animal, Plant, and Microbial Diets - Chervochkina et al.

Intestinal bacterial community in rainbow trout (Oncorhynchus mykiss) is increasingly recognized as important for aquaculture and fish health. This review summarizes the current knowledge on how various feed components, including animal- and plant-derived ingredients, as well as other feed additives, influence the gut microbiota of rainbow trout. Studies using 16S rRNA gene profiling and metagenomics demonstrate how dietary changes ...

www.mdpi.com

hermetia illucens tenebrio molitor

23/10/2024

Possible presence of the allergenic ingredients milk and wheat in edible insects produced on milk and wheat rich substrates - Smits et al.

Abstract Growing insects for food consumption contributes to sustainability as insects can grow efficiently on a wide variety of organic residual streams. These residual streams however contain a variety of proteins and – depending on their origin – can contain allergenic ingredients potentially triggering a response in patients. This study aimed to investigate the possible transfer of milk and wheat from residual streams to black ...

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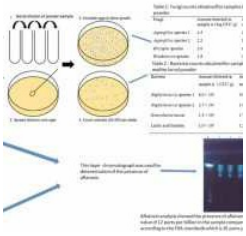
hermetia illucens



22/10/2024

Microbial and chemical analysis of independently produced batches of Tenebrio molitor larval powder - Machona et al.

Due to the continuous growth of the world population, European countries have recently declared Tenebrio molitor (mealworm) powder safe as an alternat...

www.sciencedirect.com

tenebrio molitor

21/10/2024

The on growth, histology of intestinal and hepatopancreas of using black soldier fly (Hermetia illucens) larvae meal in the diets of Pontastacus leptodactylus juvenile - Özdoğan et al.

In 60 days of feeding, a trial was conducted to evaluate the effects on liver, gut histology, and growth performance of using defatted black soldier fly Hermetia illucens (BSF) larvae meal as a fis...

www.tandfonline.com

hermetia illucens

18/10/2024

Impact of Replacing Fish Meal With Black Soldier Fly (Hermetia illucens) Meal on Diet Acceptability in Juvenile Nile Tilapia: Palatability and Nutritional and Health Considerations for Dietary Preference - Gomes de Oliveira et al.

This study aimed to evaluate the effect of two protein sources (black soldier fly [Hermetia illucens] meal [BSFM] vs. fish meal [FM]) on intake target “diet preference” in juvenile Nile tilapia (Oreo...

onlinelibrary.wiley.com

hermetia illucens

17/10/2024

Insect Meal as a Dietary Protein Source for Pheasant Quails: Performance, Carcass Traits, Amino Acid Profile and Mineral Contents in Muscles - Flis et al.

The aim of the study was to determine the effects of replacing soybean meal with insect meal on the body weight and the chemical composition of selected muscle groups of common pheasant females and males, including the mineral composition and the amino acid profile of the thigh and breast muscles. The study was conducted on three feeding groups, namely one control and two experimental groups. In the control group, plant feed components ...

www.mdpi.com

hermetia illucens tenebrio molitor

15/10/2024

Economic impact of inclusion of black soldier fly products in broiler diets: A comparison between conventional and higher animal welfare production systems in the Netherlands - Leipertz et al.

The primary objectives of this study were to analyze economic feasibility of incorporating black soldier fly products in broiler feed and to compare t...

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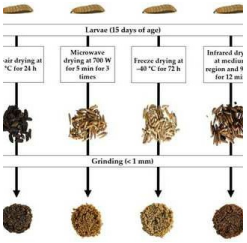
hermetia illucens



12/10/2024

Drying Methods for Black Soldier Fly (Hermetia illucens) Larvae as a Feed Ingredient for Pigs Affect In Vitro Nutrient Disappearance - Oh et al.

The objective of the present research was to determine the nutrient utilization of full-fat black soldier fly larvae (Hermetia illucens; BSFL), which were processed by various drying methods, using in vitro procedures for pigs. Four sources of BSFL were prepared using various drying methods: (1) hot-air drying at 65 °C for 24 h; (2) microwave drying at 700 W for 5 min, three times; (3) freeze drying at -40 °C for 72 h; (4) infrared ...

www.mdpi.com

hermetia illucens

11/10/2024

HPLC-MS/MS and ICP-MS for Evaluation of Mycotoxins and Heavy Metals in Edible Insects and Their Defatted Cakes Resulting from Supercritical Fluid Extraction - Cuesta Ramos et al.

Edible Insects (EIs) are an alternative source of bioactive compounds such as proteins or fatty acids and micronutrients as vitamins or minerals, thus showing potential to replace traditional foodstuffs in an economical and environmentally friendly way. Nonetheless, EIs can accumulate hazardous chemicals such as mycotoxins and heavy metals. The aim of the present study is to determine mycotoxins and heavy metal content in raw insect ...

www.mdpi.com

tenebrio molitor

10/10/2024

Replacement of fish meal with defatted black soldier fly (Hermetia illucens) in diet of Pacific white shrimp (Litopenaeus vannamei): growth, flesh quality and transcriptome - Zheng et al.

Abstract This study evaluated the impacts of replacing fish meal (FM) with defatted black soldier fly (Hermetia illucens; BSF) on the growth performance, flesh quality and transcriptome of Pacific white shrimp (Litopenaeus vannamei). In a diet containing 560 g/kg FM, BSF was used to replace 0%, 20%, 40%, 60%, 80% and 100% of dietary FM (BSF0, BSF20, BSF40, BSF60, BSF80 and BSF100). Thus, six isonitrogenous and isolipidic diets ...

brill.com

hermetia illucens

09/10/2024

Insects as Sustainable Feed: Enhancing Animal Nutrition and Reducing Livestock Environmental Impression - Fu et al.

Insects are emerging as a promising alternative source in animal nutrition, offering high protein content and a low environmental impression compared to traditional feed sources. This abstract explor...

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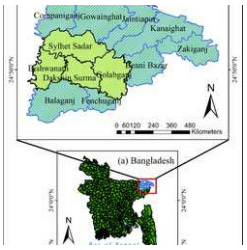
tenebrio molitor



09/10/2024

Assessing the economic viability and factors affecting farmer adoption of black soldier fly larvae as broiler feed in Bangladesh: a comparative analysis - Roy et al.

Despite its impressive economic growth, Bangladesh faces a persistent malnutrition challenge, costing over US$1 billion annually. The broiler industry plays a vital role in addressing nutritional needs by providing essential protein through meat and eggs. However, small and medium enterprises (SMEs) in this sector struggle with high feed prices, impacting their profitability and growth. Black Soldier Fly Larvae (BSFL) offers a ...

link.springer.com

hermetia illucens

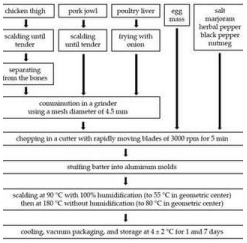
07/10/2024

Effect of increasing levels of Hermetia illucens in a fishmeal-free diet at sea bream (Sparus aurata, L.) gastrointestinal level - Daniso et al.

The impact of a fishmeal-free, high plant-protein-based diet, in which vegetable proteins (VPs) were partially substituted with the proteins derived f...

www.sciencedirect.com

hermetia illucens



07/10/2024

The Assessment of the Possibility of Using Yellow Mealworm Powder in Chicken and Pork Pâté Production - Bogusz et al.

Meat delicatessen products, including pâtés, are important for consumers' daily diets. However, due to the complex recipe composition, pâtés can also contain allergens such as gluten. Simultaneously, powdered edible insects are increasingly used to reformulate food products. Therefore, the paper aimed to investigate the feasibility of replacing wheat flour (total content: 9% w/w) with yellow mealworm powder (3:0, 2:1, 1:2, and ...

www.mdpi.com

tenebrio molitor

05/10/2024

The Nutritional Quality of Commercially Bred Yellow Mealworm (Tenebrio molitor) Compared to European Union Nutrition Claims - Noyens et al.

Due to its potential as a sustainable protein source, the industrial relevance of Tenebrio molitor, known as yellow mealworm, is set to increase substantially. Given the novelty of its application in the food industry, knowledge is lacking regarding the nutritional quality of commercially farmed mealworms. This study investigated the nutritional composition of larvae from four different rearing facilities in Belgium and specifically ...

www.mdpi.com

tenebrio molitor

05/10/2024

Effect of the Addition of Yellow Mealworm (Tenebrio molitor) on the Physicochemical, Antioxidative, and Sensory Properties of Oatmeal Cookies - Draszanowska et al.

Edible insects are receiving increased attention as a new food source, although research on their implementation in confectionary products remains scarce. The study analyzed the chemical composition, physical parameters, antioxidative, and sensory characteristics of oatmeal cookies reformulated with yellow mealworm larvae (Tenebrio molitor L.; TM) at 0% (TM0), 10% (TM10), and 30% (TM30). The inclusion of TM in the cookie recipe ...

www.mdpi.com

tenebrio molitor

05/10/2024

Fatty acid profile of insect oil and regulation mechanism as nutritious and functional oil: An integrative review - Huang et al.

Insect species exhibit remarkable diversity, and different insects show different characteristics of fatty acids. Some are rich in lauric acid, others...

www.sciencedirect.com

hermetia illucens tenebrio molitor

04/10/2024

An Assessment of the Impact of Insect Meal in Dry Food on a Dog with a Food Allergy: A Case Report - Cesar et al.

Food allergy triggers an immune response to dietary proteins, resulting in food rejection and dermatological and gastrointestinal manifestations. The preferred therapies include diets with hydrolyzed proteins or unusual single-source proteins, with insect protein emerging as a promising option, with no reported allergic reactions in dogs with a food allergy. In this case study, the effects of including black soldier fly larva (BSFL) ...

www.mdpi.com

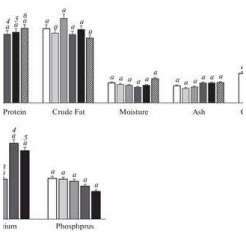
hermetia illucens tenebrio molitor

02/10/2024

Assessing environmental sustainability of substitute feeding formulas for gilthead seabream (Sparus aurata) using Life Cycle Assessment - Tignani et al.

The rise in fish and seafood consumption driven by aquaculture comes with its share of challenges and controversies, notably the need for expanded fee...

www.sciencedirect.com



01/10/2024

Nutritional Profile and Antibacterial Activity of the Black Soldier Fly (Hermetia illucens) Larvae Meal as Potential Protein Source for Aquafeeds - Geronda et al.

Abstract The black soldier fly (BSF, Hermetia illucens) is a well-known insect with promising potential in transforming organic wastes into protein-rich biomass. The BSF larvae (BSFL) can replace expensive sources of protein used in aquaculture and have antimicrobial characteristics that are recognized to inhibit pathogenic bacteria in humans, plants, poultry, and livestock. However, its potential against pathogenic bacteria in ...

link.springer.com

hermetia illucens

01/10/2024

Microbiological stability of Hermetia illucens meal subjected to two different heat treatments - Santori et al.

The use of processed insect proteins for poultry and pig feed has been authorized since August 2021 (Regulation EU, 2021/1372). It has been already au...

www.sciencedirect.com

hermetia illucens

01/10/2024

Replacing sea fish with black soldier fly fermentation homogenate in diet for Pelodiscus sinensis: growth, intestinal development and hepatic health - Gao et al.

Abstract Black soldier fly larvae (BSFL) meal has the potential to partially replace fish meal in the diet of various aquatic animals. The fermentation treatment of BSFL can retain more nutrients and reduce processing and transportation costs. This study investigated the effects of partially replacing fish meal with Black Soldier Fly Fermentation Homogenate (BSFFH) on the growth performance and health of Chinese soft-shelled (Pelodiscus ...

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hermetia illucens

01/10/2024

Improving egg quality in laying hens using calcium salt of black soldier fly larvae oil - Anas et al.

Abstract Black soldier fly larvae (BSFL) oil has gained attention as a potential substitute for vegetable oil in feed formulations designed to improve productivity and product quality. This study aimed to investigate the impact of supplementation BSFL oil calcium salt (BSFLO-SCa) on the egg quality and gene expression involved in fat metabolism in laying hens. A total of sixty 40-wk-old ISA Brown laying hens were divided into three ...

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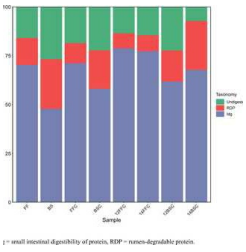
hermetia illucens



27/09/2024

Effects of heat treatment on rumen degradability and protein intestinal digestibility of black soldier fly (Hermetia illucens L.) in goat - Lu et al.

The black soldier fly larvae (BSF) are used as a substitute for soybean meal due to their high crude protein content. This experiment aims to assess the impact of heat treatment on the rumen degradability of BSF and protein digestion in the small intestine using the in situ nylon bag method and the three-step in vitro method. This study comprises a total of 8 groups (n = 6). The negative control group includes only full-fat soybeans ...

www.nature.com

hermetia illucens

26/09/2024

Dietary astaxanthin alleviates negative changes of flesh quality, long chain unsaturated fatty acids content and muscle growth on rainbow trout (Oncorhynchus mykiss) induced by black soldier fly oil via mammalian target of rapamycin and AMP-activated protein kinase α pathway: Evidence of transcripts and proteomics - Chen et al.

This study evaluated the effect of black soldier fly (Hermetia illucens) larvae oil (BO) produced by a novel technique, subcritical butane extraction,...

www.sciencedirect.com

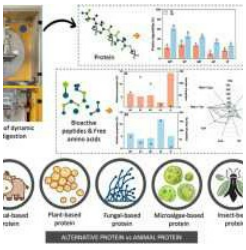
hermetia illucens

26/09/2024

Insects as animal feed: novel ingredients for use in pet, aquaculture and livestock diets - Nasution et al.

Published in World's Poultry Science Journal (Ahead of Print, 2024)

www.tandfonline.com



19/09/2024

Comparative efficacy of amino acid availability and peptidomic analysis of alternative proteins from different sources under dynamic in vitro protein digestion - Zhou et al.

The increasing global demand for animal protein highlights the critical necessity of exploring alternative protein sources. Accessing the nutritional ...

www.sciencedirect.com

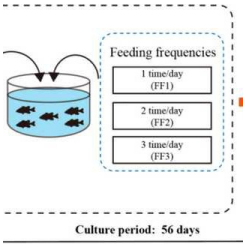
hermetia illucens

19/09/2024

Live black soldier fly larvae as environmental enrichment for native chickens: implications for bird performance, welfare, and excreta microbiota - Bellezza Oddon et al.

Dietary live insect larvae were recently proposed for use in laying hens and broiler-intensive chicken farming as an innovative form of environmental ...

www.sciencedirect.com



19/09/2024

Interactions between feed protein source and feeding frequency on growth performance and health status of largemouth bass (Micropterus salmoides) - Liu et al.

In order to evaluate the effects of the interaction between different proteins and feeding frequency on largemouth bass (Micropterus salmoides) and to provide scientific guidance for the application of novel proteins and the corresponding optimal feeding strategy, a two-factorial design (5 × 3) with five protein feeds (fishmeal (FM), Clostridium autoethanogenum protein (CAP), Tenebrio molitor (TM), Chlorella meal (ChM), cottonseed ...

link.springer.com

tenebrio molitor

19/09/2024

Full-fat black soldier fly larvae meal and yellow mealworm meal: Impact on feed protein quality, growth and nutrient utilization of Atlantic salmon (Salmo salar) post smolts - Perera Willora et al.

The shift towards insect-based alternatives in aquafeeds stems from the need to reduce the carbon footprint associated with the ingredients used in sa...

www.sciencedirect.com

tenebrio molitor

18/09/2024

Freezing storage combined with freeze-drying of black soldier fly (Hermetia illucens) larvae to produce oil rich in free lauric acid - Hurtado-Ribeira et al.

Abstract The fat of Hermetia illucens larvae (black soldier fly, BSFL) is a rich source of lauric acid (LA), and its free fatty acid (FFA) form holds valuable potential for applications in food, feed, pharmaceuticals, or cosmetics. This study aimed to establish specific processing conditions of BSFL that naturally promote lipolysis, resulting in a high free LA (FLA) rich oil. Freezing was used for slaughtering, with different times ...

brill.com

hermetia illucens

14/09/2024

Impacts of substituting fish meal with full-fat or defatted black soldier fly (Hermetia illucens) larvae on growth, quality, and health of Nile tilapia (Oreochromis niloticus) fingerlings - Sangsawang et al.

This study investigated the use of black soldier fly (Hermetia illucens) larvae (BSFL), provided in either full-fat (FBSF) or defatted (DBSF) forms, a...

www.sciencedirect.com

hermetia illucens

12/09/2024

Assessing the performance, egg quality, serum analysis, heavy metals and essential trace metals accumulation in laying hen eggs and tissues fed black soldier fly (Hermetia illucens) larvae meal - Khan et al.

Black soldier fly (BSF) larvae convert wastes into protein, playing a vital role in addressing the challenge of sustainable poultry production. These ...

www.sciencedirect.com

hermetia illucens

12/09/2024

Examining the dietary effect of insect meals on the innate immune response of fish: A meta-analysis - Chen et al.

Insect meal inclusion in aquaculture feed has received increased interest as a sustainable alternative to fishmeal and recent evidence has shown addit...

www.sciencedirect.com

tenebrio molitor

12/09/2024

Tenebrio molitor flour as a partial fish replacer and its effect on the quality of hake sausages - Rodríguez et al.

Abstract The effect of replacing hake with Tenebrio molitor on the physicochemical, nutritional and sensory characteristics of fish sausages was investigated in this study. Two types of samples were prepared, a control hake sausage (HFC, 49.3% hake) and a modified version in which hake was partially replaced by Tenebrio molitor insect flour (HFT, 44.37% hake + 4.93% insect flour). The colour, nutritional profile (including fatty ...

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tenebrio molitor

10/09/2024

Effect of larval instar and post-harvest treatments on heavy metals in BSFL and frass reared on commercial food waste streams - Alagappan et al.

Black soldier fly larvae from different food waste streams subjected to common post-harvest treatments was found to be safe for heavy metals and mycotoxins as per Australian animal feed regulations. ...

ifst.onlinelibrary.wiley.com

hermetia illucens

05/09/2024

Willingness of West African Consumers to Buy Food Produced Using Black Soldier Fly Larvae and Frass - Traore et al.

The use of black soldier fly (BSF) larvae and frass in agriculture can make an important contribution to food and nutrition security. However, it is important to understand whether consumers are willing to consume food products resulting from the use of BSF larvae as animal feed or BSF frass as fertilizer. This study employed the stated preference approach as food products produced using BSF larvae and frass are not currently available ...

www.mdpi.com

hermetia illucens

05/09/2024

Exploring insect meals as novel sources of vitamin D: evaluation of vitamin D precursors, biofortification by UV-B exposure, and in vivo efficacy - Grundmann et al.

Abstract Vitamin D deficiency is a global problem due to limited dietary sources, necessitating the exploration of alternative sources. The objective of this study was to investigate the suitability of UV-B-exposed insect meals as a source of vitamin D. First, two insect meals from Hermetia illucens and Tenebrio molitor larvae were analysed for their concentrations of vitamin D2, D3 and their precursors ergosterol and 7-dehydro...

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hermetia illucens tenebrio molitor

02/09/2024

The Influence of Alternative Diets and Whole Dry Black Soldier Fly Larvae (Hermetia illucens) on the Production Performance, Blood Status, and Egg Quality of Laying Hens - Montalbán et al.

Given the significant environmental consequences of current poultry feed practices and the heavy dependence of the European Union on imported soybeans, studying alternatives is crucial. This study evaluated the potential benefits of using locally sourced alternative plant-based ingredients and whole dry black soldier fly larvae in the diet of laying hens. The experiment involved 120 Isazul hens at 23 weeks old, which were divided ...

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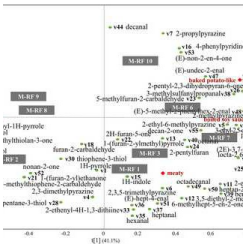
hermetia illucens



02/09/2024

Sensorial flavor characteristics and volatile Maillard reaction products of Tenebrio molitor mealworm based-reaction flavors with beef broth-like flavor - Park et al.

This study analyzed the sensorial flavor characteristics and volatile Maillard reaction products of Tenebrio molitor mealworm based-reaction flavors (M-RFs) optimized in our previous study; it also explored the main contributors to M-RFs with a desirable beef broth-like flavor. Seven flavor characteristics (i.e., sweet, sour, meaty, sulfur-like, boiled soy sauce-like, baked potato-like, and dried shrimp-like flavors) were profiled ...

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tenebrio molitor

02/09/2024

Effect of two full-fat insect meals, yellow mealworm and black soldier fly larva, on growth performance of juvenile yellowtail - Ido et al.

Abstract Given the expanding demand for fish meal (FM) worldwide, insect meal has become a promising alternative to FM for sustainable aquaculture. Yellowtail (Seriola quinqueradiata), the predominant farmed fish in Japan, is a carnivorous marine species that requires a substantial quantity of FM in its diet. Two feeding trials were conducted with the aim of assessing the applicability of two full-fat insect meals, yellow mealworm ...

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hermetia illucens tenebrio molitor

30/08/2024

Effects of Different Defatting Methods of Black Soldier Fly (Hermetia illucens) Larvae Meal on the Metabolic Energy and Nutrient Digestibility in Young Laying Hens - Xin et al.

This study aimed to investigate the effects of different defatting methods of black soldier fly (Hermetia illucens) larvae meal (BSFM) on the metabolic energy and nutrient digestibility in laying hens. Sixty young laying hens (Hy-Line W-36) aged 63 days were randomly divided into two groups (G1 and G2), each with five replicates of six hens housed in individual cages. Group G1 was fed 25% pressed black soldier fly meal (BSFMp) ...

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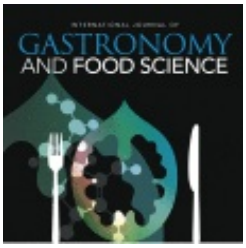
hermetia illucens



28/08/2024

Quality properties of salt-fermented mealworms (Tenebrio molitor larvae) with added millet - Kim et al.

Mealworms, edible insects, have attracted attention as a sustainable alternative protein source. This study introduces an insect-based product obtaine...

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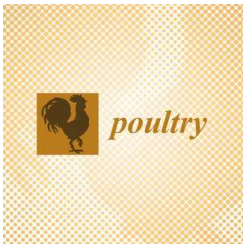
tenebrio molitor



26/08/2024

Metabolizable Energy Value of Fat and Meals Obtained from Black Soldier Fly Larvae (Hermetia illucens) for Broiler Chickens - Chobanova et al.

An experiment was conducted to determine the apparent metabolizable energy (AME) and nitrogen-corrected AME (AMEn) of defatted black soldier fly larvae meal (BSM), full-fat dry larvae meal (BSL), and larvae fat (LF) for broiler chickens. The BSM, BSL, and LF contained on a g/kg basis, respectively, crude protein, 459, 399, 0; crude fat, 171, 240, 923; dry matter, 963, 940, 997; neutral detergent fiber, 210, 333, 0; acid detergent ...

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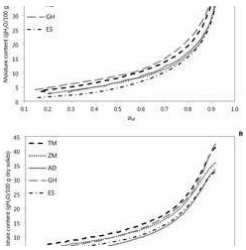
hermetia illucens



24/08/2024

Sorption isotherms of edible insect's flours: mathematical modeling and hysteresis - Tejada-Ortigoza et al.

The interest in insects as food has increased in the latest years. Their use as low-moisture food ingredients has led to study their behavior during storage. The moisture sorption isotherms of Mexican edible insectʾs flours (cricket-Acheta domesticus, mealworm-Tenebrio molitor, superworm-Zophoba morio, grasshopper-Sphenarium purpurascens, escamol-Liometopum apiculatum) were determined through the dynamic method. Mathematical models ...

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hermetia illucens | tenebrio molitor

23/08/2024

The effect of dietary full-fat Hermetia illucens larvae meal on growth performance and intestine physiology in largemouth bass (Micropterus salmoides) - Dong et al.

The present study aimed to investigate the effects of different inclusion levels of full-fat Hermetia illucens larvae (HI) meal as a protein source on...

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hermetia illucens

22/08/2024

A preliminary study on the effects of substituting fishmeal with defatted black soldier fly (Hermetia illucens) larval meal on Asian seabass (Lates calcarifer) juveniles: Growth performance, feed efficiency, nutrient composition, disease resistance, and economic returns - Liu et al.

This study aims to develop an alternative aquafeed derived from insect meal for Lates calcarifer juveniles, with the objectives of exploring the physiological performance, biological parameters, and ...

onlinelibrary.wiley.com

hermetia illucens

19/08/2024

Performance, egg quality and organ traits of laying hens fed black soldier fly larvae products - Dörper et al.

Due to consumer demands and institutional pressure, the egg production sector, is looking for alternative protein sources for laying hen feed to suppo...

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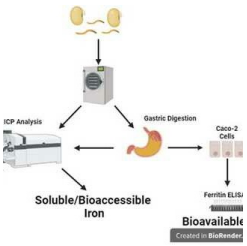
hermetia illucens



18/08/2024

Comparison of the In Vitro Iron Bioavailability of Tempeh Made with Tenebrio molitor to Beef and Plant-Based Meat Alternatives - Wilson et al.

Iron is an essential mineral that supports biological functions like growth, oxygen transport, cellular function, and hormone synthesis. Insufficient dietary iron can lead to anemia and cause fatigue, cognitive impairment, and poor immune function. Animal-based foods provide heme iron, which is more bioavailable to humans, while plant-based foods typically contain less bioavailable non-heme iron. Edible insects vary in their iron ...

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tenebrio molitor

17/08/2024

Growth and physiological indices of hybrid grouper (Epinephelus fuscoguttatus × Epinephelus lanceolatus) fed with black soldier fly larvae meal - Ukwela et al.

Abstract Having fish meal (FM) as the principal protein source in aquafeed is no longer sustainable and economically viable. The market demand for hybrid grouper is on the rise, hence the need for a sustainable alternative protein source in their diets that will help farmers profitably meet the rising demand. This study was conducted to determine the appropriate inclusion levels and effect of black soldier fly larvae meal (BSFLM) ...

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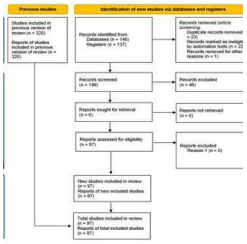
hermetia illucens



16/08/2024

Nutritional Value of the Larvae of the Black Soldier Fly (Hermetia illucens) and the House Fly (Musca domestica) as a Food Alternative for Farm Animals - A Systematic Review - da-Silva et al.

Dietary alternatives using insect-based products as an alternative for farm animal nutrition have been the object of study due to the high nutritional value of these feeds and the costs related to both their production and consequently their commercialization. Thus, the use of flies, especially larvae, has a high content of proteins and lipids (fat), as well as minerals and essential nutrients for development and growth, directly ...

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hermetia illucens

13/08/2024

Effects of dietary defatted black soldier fly (Hermetia illucens) larvae meal substituting fish meal on growth, antioxidative capacity, immunity, intestinal histology and microbiota of juvenile Chinese mitten crab (Eriocheir sinensis) - Yao et al.

This study evaluated the effects of replacing dietary fish meal (FM) with defatted black soldier fly (Hermetia illucens) larvae meal (DBSFLM) on growt...

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hermetia illucens

12/08/2024

Partial replacement of soybean with alternative protein sources: Effects on meat quality, sensory attributes, and fatty acids and amino acids content of breast meat of a local chicken strain - Yalçin et al.

The environmental sustainability of soybean cultivation has been questioned as it has been linked to deforestation, eutrophication, pesticide use, and carbon dioxide footprint. Agri-industrial byprod...

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hermetia illucens

12/08/2024

Effects of dietary replacement of fishmeal by defatted Tenebrio molitor meal, Clostridium autoethanogenum protein meal and Chlorella vulgaris meal on the freshness of turbot (Scophthalmus maximus) during chilled storage - Qi et al.

The present work evaluated the effects of dietary fishmeal replacement with three non-food protein sources, including defatted Tenebrio molitor meal (...

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07/08/2024

Evaluation of four novel non-grain protein sources completely replacing soybean meal on growth performance, serum biochemistry, amino acid transport and intestinal health of grass carp (Ctenopharyngodon idella) at different water temperatures - Wu et al.

To investigate the effects of non-grain protein source and water temperature on growth and feed utilization differences of grass carp, the effects of ...

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07/08/2024

A decade of advances in black soldier fly research: from genetics to sustainability - Athanassiou et al.

Abstract Black soldier fly (BSF), Hermetia illucens, is one of the most explored insect species mass-produced for feed, but also for food and technical purposes. Considering the rapid developments in both research and industrial production of this insect species in the last decade, this review intends to reflect on the most current scientific insights and define the future trends and needs for the most relevant associated research ...

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hermetia illucens

06/08/2024

Unlocking the potential of black soldier fly frass as a sustainable organic fertilizer: A review of recent studies - Manan et al.

Using Hermetia illucens, or Black Soldier Fly (BSF) frass as an organic fertilizer is becoming increasingly popular in many countries. As a byproduct ...

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hermetia illucens

05/08/2024

Black soldier fly (Hermetia illucens) as a protein ingredient in poultry feed - Silva et al.

Edible insects, specifically the black soldier fly (BSF, Hermetia illucens), are emerging as a sustainable alternative to traditional protein sources in poultry diets. The BSF larvae, rich in prote...

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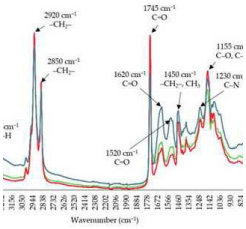

03/08/2024

The Impact of Drying Methods on the Quality of Blanched Yellow Mealworm (Tenebrio molitor L.) Larvae - Bogusz et al.

The growing world population necessitates the implementation of appropriate processing technologies for edible insects. The objective of this study was to examine the impact of distinct drying techniques, including convective drying at 70 °C (70CD) and 90 °C (90CD) and freeze-drying (FD), on the drying kinetics, physical characteristics (water activity, color), chemical characteristics (chemical composition, amino acid profile, ...

www.mdpi.com

tenebrio molitor

02/08/2024

Breaking down barriers: live or dehydrated dietary whole black soldier fly larvae supplementation in slow growing chickens preserve meat quality and sensory traits - Fiorilla et al.

This study investigated the effects of supplementing the diet of a slow-growing autochthonous chicken breed with dehydrated or live Black Soldier Fly ...

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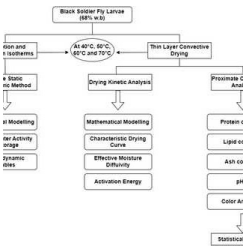
hermetia illucens



01/08/2024

Comprehensive Analysis of Adsorption–Desorption Isotherms, Drying Kinetics, and Nutritional Quality of Black Soldier Fly (Hermetia illucens) Larvae - Lehmad et al.

Black soldier fly larvae (BSFL) are gaining attention as an alternative protein source in food and feed, promoting a circular economy, particularly in their dried form. In the literature, monitoring the behavior of larvae in a humid environment has not been established under different conditions of temperature and relative humidity as well as the quality of dried larvae is not always correlated to the conditions of drying. Therefore, ...

link.springer.com

hermetia illucens

Industrial applications - media

Sources : mainstream media, regulatory sources, institutionnal, company,..

25/10/2024

Algae and insects in salmon feed show unexpected benefits says BioMar

BioMar has announced new research showing that alternative feed ingredients like algal oils, single-cell proteins, and insect meal not only improve sustainability but also enhance growth, health, and welfare in farmed fish. Continue reading

www.salmonbusiness.com

09/10/2024

Insect-rearing byproduct offers new broiler feed alternative

Black soldier fly is increasingly well-known as a sustainable alternative protein. But frass, a byproduct of producing meal from the insect, could also offer an option for feeding growing broilers. The post Insect-rearing byproduct offers new broiler feed alternative appeared first on Modern Poultry.

modernpoultry.media

hermetia illucens

30/09/2024

Aquafeed.com | Insect ingredients: A turnkey solution for low-footprint aquaculture feed

With 2030 fast approaching, the need to stop environmental harm is increasing. Insects have emerged as low-impact, healthy ingredients for feed. How can the aquaculture value chain benefit?

www.aquafeed.com

hermetia illucens

19/09/2024

NASA awarded $750,000 to a business that wants to feed astronauts fresh microgreens and insects

Interstellar Lab won NASA's grand prize for its project designed to help feed and nourish astronaut on long-duration spaceflights. Ken Chamberlain NASA needs a better way to nourish its astronauts on long-duration space missions, like to Mars. Interstellar Lab designed a sustainable farming system that could address the issue. For its efforts, Interstellar Lab won ... Continue reading NASA awarded $750,000 to a business that wants ...

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hermetia illucens

Industrial applications - articles

Sources : HAL, Pubmed, BASE, MDPI, F100Research, Jounal of Insects as Food and Feed, ...

31/10/2024

Fatty acid composition and anti-cancer activity of essential oil from Tenebrio Molitor larvae in combination with zoledronic acid on prostate cancer - Askari et al.

The essential oil extracted from Tenebrio molitor larvae (EOTM) is a natural product containing trace elements with potential therapeutic properties. This study aimed to assess the anticancer effects of EOTM and its synergistic interactions with zoledronic acid, a bisphosphonate drug, on prostate cancer cell lines. The chemical composition of EOTM was analyzed using GC-MS revealing a high concentration of fatty acids. The cytotoxicity of EOTM, both as a standalone treatment and in combination with zoledronic acid, was evaluated on prostate ...

www.cell.com

tenebrio molitor

30/10/2024

Effect of temperature on growth, metabolism, and gas exchange in Hermetia illucens larvae reared under commercial and laboratory conditions - Schøn et al.

Abstract The world's socio-economic development is continuously increasing the demand for efficient production of food, feed, and energy from the agricultural sector. In this respect, the emerging production of black soldier fly larvae (BSFL) represents a promising system to upscale low-quality resources to higher-quality resources usable as feed or biodiesel. To optimize BSFL production it is critical to establish methods that ...

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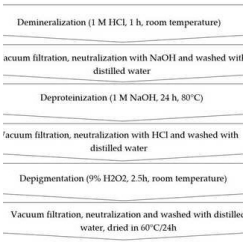
hermetia illucens



29/10/2024

Better Ce (III) Sorption Properties of Unprocessed Chitinous Waste from Hermetia illucens than Commercial Chitosans - Bąk et al.

Insect farming generates a new type of chitinous waste in the form of dead specimens that have died of natural causes and insect moults (puparia), particularly large amounts of which are generated during the rearing of holometabolous insects. Following the circular economy paradigm, we treated waste in the form of puparia and dead adults of H. illucens as a valuable material, i.e., as sources of chitin, and tested it as a sorbent ...

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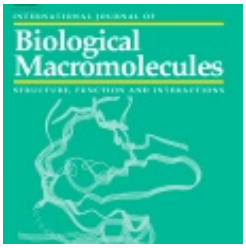
hermetia illucens



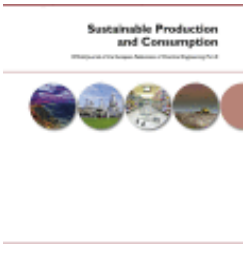
29/10/2024

Impact of salting-in/out assisted extraction on rheological, biological, and digestive, and proteomic properties of Tenebrio molitor larvae protein isolates - Jiang et al.

In this study, NaCl (salting-in) and (NH4)2SO4 (salting-out) treatments were employed in alkaline extraction and acid precipitation procedures, respec...

www.sciencedirect.com

tenebrio molitor



28/10/2024

Integrating edible insect into circular agriculture for sustainable production - Sokame et al.

Sustainable agriculture faces the challenge of balancing environmental stewardship, food security, and the needs of a growing global population. This ...

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hermetia illucens tenebrio molitor

28/10/2024

Exploring the chemistry and composition of black soldier fly eumelanin, a material for a circular economy - Mostert et al.

DOI: 10.1039/D4MA00825A (Paper) Mater. Adv., 2024, Advance Article Exploring the chemistry and composition of black soldier fly eumelanin, a material for a circular economy† Received 14th August 2024 , Accepted 18th October 2024 First published on 28th October 2024 Abstract Eumelanin is a black-brown biopigment that provides photoprotection and pigmentation in mammals, insects, and invertebrates. It can be obtained by oxidative polymerisation of 5,6-dihydroxyindole (DHI) and its 2-carboxylic acid (DHICA). Due to its unique ...

pubs.rsc.org

hermetia illucens

22/10/2024

Yellow mealworm: effects of adults breeding density on adults and larvae performances from an industrial perspective - Palumbo et al.

A key aspect to optimise the Tenebrio molitor (TM) farm productivity is to find an optimal breeding density for adults. To this purpose, this study in...

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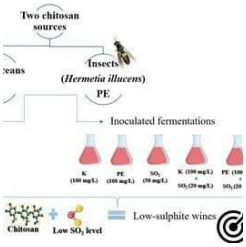
tenebrio molitor



21/10/2024

Antimicrobial Activity of Chitosan from Different Sources Against Non-Saccharomyces Wine Yeasts as a Tool for Producing Low-Sulphite Wine - Tedesco et al.

Chitosan is used as an antimicrobial agent in different agri-food applications; in winemaking, the use of chitosan from Aspergillus niger is authorized, but other sources of chitin, and consequently of chitosan, are available, such as crustaceans and insects. This work investigates the antimicrobial efficiency of chitosan from crustaceans and insects (Hermetia illucens) against non-Saccharomyces yeasts in wine. For this aim, the ...

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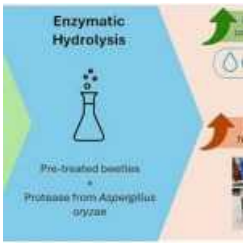
hermetia illucens



19/10/2024

Eco-friendly technologies for obtaining antioxidant compounds and protein hydrolysates from edible insect Tenebrio molitor beetles - Muñoz-Seijas et al.

The functional properties of edible insects can be explored by a joint use of novel technologies. This work applied varied pre-treatments (ultra-sound...

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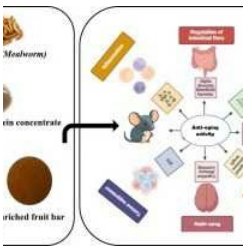
tenebrio molitor



15/10/2024

Tenebrio molitor (Mealworm) protein as a sustainable dietary strategy to improve health span in D-galactose-induced aged mice - Anusha et al.

Aging is an irreversible and continuous biological process involving intricate and interconnected mechanisms. The present work is focused on unravelli...

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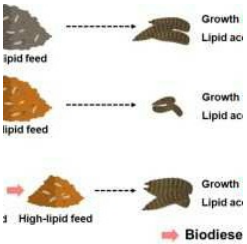
tenebrio molitor



13/10/2024

Feed-shifting strategy for increasing biodiesel production from black soldier fly larvae - Kim et al.

The aim of this study was to increase the bioconversion efficiency (lipid accumulation) of black soldier fly larvae while simultaneously increasing bi...

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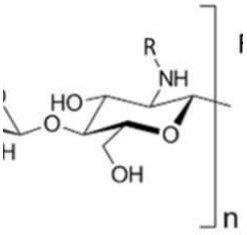
hermetia illucens



10/10/2024

Chitin Extracted from Black Soldier Fly Larvae at Different Growth Stages - Marangon et al.

The black soldier fly (BSF) Hermetia Illucens can grow rapidly and on a wide variety of organic materials, and it is extensively used as a means of disposing of household organic waste. Different phases of the life cycle of BSF larvae (BSFL) are used in this work to extract chitin after the removal of lipids, mineral salts, and proteins. Multiple techniques, such as X-ray diffractometry, infrared spectroscopy, solid-state Nuclear ...

www.mdpi.com

hermetia illucens

10/10/2024

Agronomic potential of Hermetia illucens frass in the cultivation of ryegrass in distinct soils - Rehan et al.

Abstract Cropping systems are strongly dependent on mineral fertilisers, which are effective in achieving high crop productivities. However, these chemical inputs end up compromising soil quality in the long-term. Frass from black soldier fly (BSF) larvae is a novel organic fertiliser that is rich in organic matter and advocated as a material that can sustain crop productivity while increasing soil quality. This study aimed at ...

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hermetia illucens

09/10/2024

Green chitosan extraction from Hermetia illucens breeding waste (prepupal cases): Characterization and bioadsorption activity - Elouali et al.

Heavy metal contamination has harmful consequences for the ecosystem. They are naturally non-biodegradable, and can cause severe ecotoxicity and numer...

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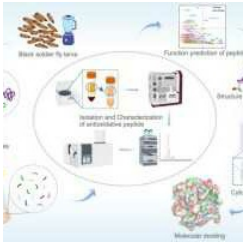
hermetia illucens



28/09/2024

Structural characterization, HepG2 cell cytoprotective ability, and antioxidant mechanism of novel antioxidant peptides identified from black soldier fly larvae (Hermetia illucens L.) - Meng et al.

This study isolated a novel antioxidant peptide from black soldier fly larvae (BSFL) using enzymatic hydrolysis. Firstly, the BSFL enzymatic hydrolysa...

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hermetia illucens

24/09/2024

Oil-in-water emulsion stabilized by hydrolysed black soldier fly larvae proteins: Reproduction of experimental data via phase-field modelling - Sales Queiroz et al.

A phase field model based on the Cahn-Hilliard equation was validated experimentally by comparison of the numerical data with experimental data of emu...

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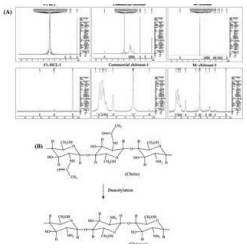
hermetia illucens



18/09/2024

Preparation of chitosan oligosaccharides from chitosan of tenebrio molitor and its prebiotic activity- Kim et al.

This study aimed to establish the optimal production conditions for mealworm chitosan oligosaccharides (MCOS) using the response surface methodology and measure the prebiotic effect of MCOS prepared on cecal microbiota through in vitro anaerobic fermentation. The optimal conditions for MCOS production using chitosanase were 2.5% substrate, 30 mg/g enzyme, and 6 h reaction time. Matrix-assisted laser desorption ionization-time of ...

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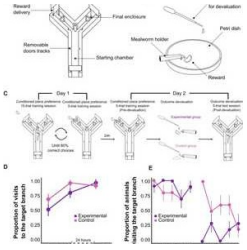
tenebrio molitor



17/09/2024

Goal-directed behavior in Tenebrio molitor larvae- Dissegna et al.

Can signs of intentional behavior be traced in an insect larva, traditionally thought to be driven only by mere reflexes? We trained Tenebrio molitor coleoptera larvae in a uniform Y-maze to prefer one target branch to get access to food, observing their ability to learn and retain access to the reward-associated side for up to 24 h. During reward devaluation, the reward food (experimental group) and a different food (control group) ...

www.nature.com

tenebrio molitor

16/09/2024

Preliminary biogas production assessment on insect frass and leachates of the organic wastes fed to larvae: A Johannesburg-based factory case study - Rashama et al.

Black soldier fly larvae feedstocks leachates and frass biological methanation.

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hermetia illucens

15/09/2024

Exploring the potential of Hermetia illucens larvae extracts: A promising approach for dermocosmetic formulations - Filipe et al.

Globally, the yearly disposal of 1.3 billion tonnes of food raises environmental and public health concerns. Black soldier fly (BSF) larvae present a sustainable solution, converting organic waste into nutrient-rich biomass. The extracted oil from BSF larvae, rich in fatty acids (FA), offers an eco-friendly alternative for the cosmetic industry. In this study, larvae sourced from a Portuguese company were fed olive pomace, a by-product of olive oil production.The lipidic sample extracted revealed a composition high in oleic acid, valuable ...

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hermetia illucens

13/09/2024

Influence of direct supplementation of different levels of black soldier fly larvae (Hermetia illucens) frass to a recirculating aquaponic system: focusing on fish (Cyprinus carpio var. specularis), plant (Lactuca sativa var. ramosa Hort) and water quality - Abdessan et al.

The production of insects tends to increase due to their capacity to convert organic waste into protein. Nonetheless, insects cannot process all organ...

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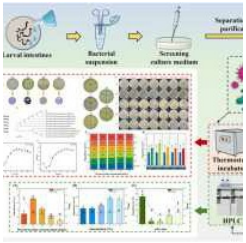
hermetia illucens



12/09/2024

Screening of oxytetracycline-degrading strains in the intestine of the black soldier fly larvae and their degradation characteristics - Chen et al.

The presence of excessive antibiotic residues poses a significant threat to human health and the environment. This study was designed to identify an e...

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hermetia illucens

09/09/2024

Proteomic and transcriptomic analysis of cold- and heat-tolerant black soldier fly (Hermetia illucens) larvae - Feng et al.

Abstract The larvae of black soldier fly (BSFL) can convert organic waste into insect proteins. Their bioconversion performance is considerably reduced under hot and cold conditions. To address this problem, we performed selective breeding of BSFL at 16 °C (T16) and 40 °C (T40), and evaluated differentially expressed genes and proteins in the heat- and cold-tolerant breeds. Both the T16 and T40 breeds exhibited higher body weight, ...

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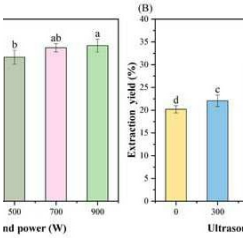
hermetia illucens



05/09/2024

The Effect of Ultrasound Treatment on the Structural and Functional Properties of Tenebrio molitor Myofibrillar Protein - Wang et al.

The objective of this study was to explore the impacts of various ultrasonic powers (0, 300, 500, 700, and 900 W) on the structure and functional attributes of the myofibrillar protein (MP) of Tenebrio molitor. As the ultrasonic intensity escalated, the extraction efficiency and yield of the MP rose, while the particle size and turbidity decreased correspondingly. The reduction in sulfhydryl group content and the increase in carbonyl ...

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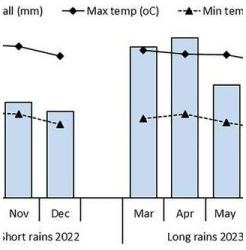
tenebrio molitor



05/09/2024

Frontiers | Insect frass fertilizer as a regenerative input for improved biological nitrogen fixation and sustainable bush bean production - Chepkorir et al.

Bush bean (Phaseolus vulgaris L.) production is undermined by soil degradation and low biological nitrogen fixation (BNF) capacity. This study evaluated the ...

www.frontiersin.org

hermetia illucens

04/09/2024

Whole genome sequence data of ZEN-degrading strain Levilactobacillus brevis PYN10_6_2 isolated from Tenebrio molitor larval feces - Zhao et al.

Levilactobacillus brevis PYN10_6_2, a lactic acid bacterial strain previously isolated from Tenebrio molitor larval feces, possesses the ability to co...

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tenebrio molitor

03/09/2024

Exploring the connection between food and midgut digestive enzymes to improve honey bee (Apis mellifera) nutrition - Altmetric Listen Original research article Exploring the connection between food and midgut digestive enzymes to improve honey bee (Apis mellifera) nutrition - Pavlović et al.

Honey bee malnutrition is the leading challenge in beekeeping. Finding a high-quality and cheap alternative to polyfloral pollen is essential. To find a quick and cheap analysis that can be used to...

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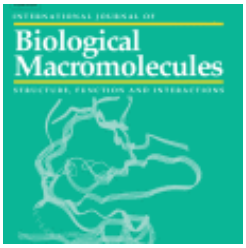
tenebrio molitor



02/09/2024

Physical and chemical characterization of chitin and chitosan extracted under different treatments from black soldier fly - Yuan et al.

The shell of Hermetia illucens L. contains considerable amounts of chitin, which has various biological activities. So far, few studies have focused o...

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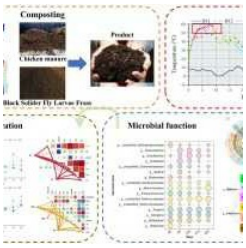
hermetia illucens tenebrio molitor



29/08/2024

Effect of black soldier fly larvae frass addition on humus content during low temperature co-composting - Zhang et al.

Initiating aerobic fermentation under low temperature is the main challenge for winter livestock manure composting. This study aims to address this is...

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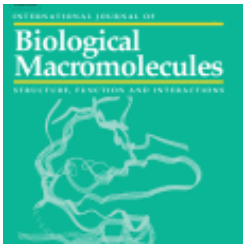
hermetia illucens



28/08/2024

In vitro antifungal activity and in vivo edible coating efficacy of insect-derived chitosan against Botrytis cinerea in strawberry - Vitti et al.

Strawberry is a perishable fruit, susceptible to development of rot by a range of fungi, in particular Botrytis cinerea. Chitosan represents an altern...

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hermetia illucens

28/08/2024

Characterisation, antibacterial activity, and prebiotic potential of dried Hermetia illucens L. larvae and of their fractions - Bonomini et al.

Abstract In this study, black soldier fly (BSF) dried larvae were fractionated into their defatted, lipid, protein, and chitin-rich fractions. The samples were then characterised in terms of proximate composition, analysis of amino acids, analysis of the molecular weight distribution of proteins via gel electrophoresis, and fatty acids analysis of the lipid fraction. The antibacterial activity of all fractions was determined against ...

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hermetia illucens

27/08/2024

Exploring the role of RNASET2 in the immune response of black soldier fly larvae - Caramella et al.

RNASET2 involvement in the immune response of black soldier fly larvae.

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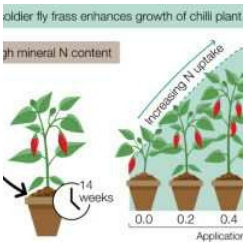
hermetia illucens



27/08/2024

Manure-derived black soldier fly frass enhanced the growth of chilli plants (Capsicum annuum L.) and altered rhizosphere bacterial community - Gurung et al.

Sustainable manure management is crucial for minimising environmental impacts as the livestock industry expands to meet the increasing demand for prot...

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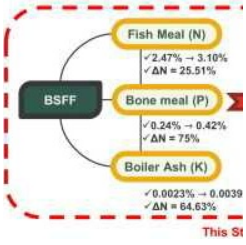
hermetia illucens



26/08/2024

Co-composting of Black Soldier Fly Frass (BSFF) with various organics additives for nutrient enhancement - Woo

Black soldier fly frass is the nutrient-rich waste produced by black soldier fly larvae. This study aimed to enhance the frass by co-composting it wit...

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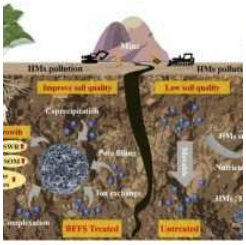
hermetia illucens



24/08/2024

Pyrite functionalized Black Soldier Fly feces biochar for mine soil quality improvement and heavy metals immobilization - Li et al.

Frequent mining activities have led to an increasing transfer of heavy metals to the soil. Pyrite functionalized Black Soldier Fly feces biochar compo...

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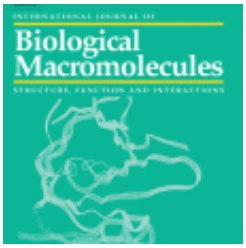
hermetia illucens



24/08/2024

Effects of ultrasonic treatment on the structure and functional characteristics of myofibrillar proteins from black soldier fly - Ni et al.

In the process of utilizing black soldier fly larvae (BSFL) lipids to develop biodiesel, many by-products will be produced, especially the underutiliz...

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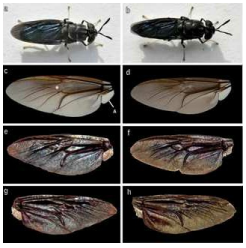
hermetia illucens | tenebrio molitor



23/08/2024

Sexual dimorphism in the structural colours of the wings of the black soldier fly (BSF) Hermetia illucens (Diptera: Stratiomyidae) - Rebora et al.

The black soldier fly (BSF) Hermetia illucens (Diptera: Stratiomyidae) plays a significant role at the larval stage in the circular economy due to its ability to convert organic waste into valuable products for energy, food, feed, and agricultural applications. Many data are available on larval development and biomass generation, but basic research on this species is lacking and little is known about adult biology, in particular ...

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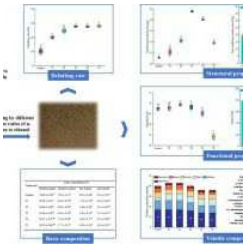
hermetia illucens



23/08/2024

Changes of structural characteristics, functional properties and volatile compounds of Tenebrio molitor larvae protein after sustainable defatting process: Influence of the different volume ratios of n-hexane to ethanol - Zhang et al.

This work aimed to study the effect of defatting via the mixture of n-hexane and ethanol under different volume ratio on the changes of structural cha...

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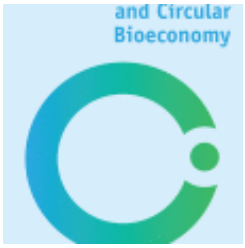
tenebrio molitor



22/08/2024

Food for thought: Valuable bioproduction pathways emerge in a circular food production model - Doughty et al.

Ensuring the production and supply of food, fuel and other resources meets growing demands is among the world's most important and difficult challenge...

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hermetia illucens

21/08/2024

Anti-inflammatory and anti-hyperglycemia effects of mealworm (Tenebrio molitor larvae) protein extracted by four methods: alkali, salt, enzyme, and screw press - Oh et al.

Abstract The use of edible insect protein in food products is contingent on their biological effects. Conventional protein extraction methods are not only time-consuming and costly but also energy-i...

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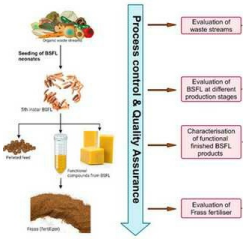
tenebrio molitor



20/08/2024

Current and Potential Applications of Vibrational Spectroscopy as a Tool in Black Soldier Fly Production and the Circular Economy - Alagappan et al.

Edible insects are characterized by their low environmental footprint compared with traditional sources of animal and plant proteins. This is due to the high feed conversion efficiency of edible insects. The black soldier fly (Hermetia illucens) larvae (BSFL) are one of the preferred candidates to be used as alternative sources of protein, due to their ability to add value to a wide range of organic and food waste streams. The ...

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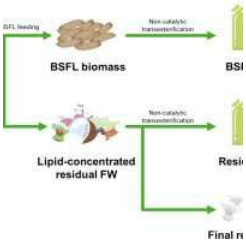
hermetia illucens



20/08/2024

Strategic approach for converting fat-rich food waste into high-quality biodiesel using black soldier fly larvae for sustainable bioenergy - Kim et al.

Food waste (FW) comprises carbohydrates, proteins, lipids, and water, posing technical challenges for effective treatment and valorisation. This study...

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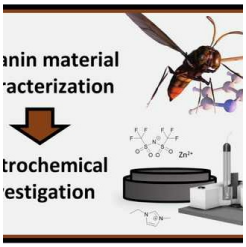
hermetia illucens



17/08/2024

Sustainable organic electrodes using black soldier fly-derived melanin for zinc-ion hybrid capacitors - Al-Shamery et al.

Eumelanin is a promising pigment for use in energy storage applications but has limitations hindering its wide usage. Here, melanin extracted from the black soldier fly is used to prepare electrodes with higher performance than synthetic melanin in zinc-ion hybrid capacitor applications.

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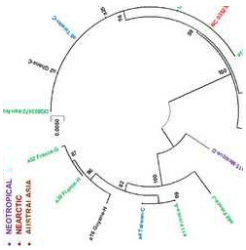
hermetia illucens



15/08/2024

Genetic structure of black soldier flies in northern Iran - Boukan et al.

Background The black soldier fly (BSF), Hermetia illucens, is known for nutrient-recycling through the bioconversion of organic waste into protein-rich insect larvae that can be processed into an animal feed ingredient. However, information on species distribution and its genetic structure in Iran is scarce. Methods and results We directed a survey on the Caspian Sea coast, with a reconstructing demographic relationships study ...

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hermetia illucens

15/08/2024

Yellow mealworm frass: A promising organic fertilizer for common sowthistle (Sonchus oleraceus L.) and bristly oxtongue (Helminthotheca echioides (L.) Holub) cultivation - Karkanis et al.

Common sowthistle (Sonchus oleraceus L.) and bristly oxtongue [Helminthotheca echioides (L.) Holub] are winter broad-leaved weeds that have gained interest for cultivation as leafy vegetables. The aim of this study was to examine the effects of frass from the yellow mealworm (Tenebrio molitor L.) on nutrient content in soil, growth parameters, and nutrient content in above-ground plant tissues of common sowthistle and bristly oxtongue. Thus, two pot experiments were carried out with 5 treatments [control, calcium ammonium nitrate (CAN) ...

www.cell.com

tenebrio molitor

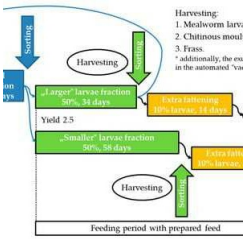
14/08/2024

Selective cytotoxicity of standardised n-hexane extract of black soldier flies' larvae on cancerous skin cells mitochondria isolated from rat model of melanoma - Arast et al.

Melanoma is known as a highly lethal cancer. In melanoma cells, apoptosis signalling which relies heavily on the acute activity of mitochondria and reactive oxygen species (ROS) formation is suppre...

www.tandfonline.com

hermetia illucens



12/08/2024

Method of Planning and Scheduling the Production Process of Yellow Mealworm Larvae for a Small Enterprise - Kowalski

In the context of the growing demand for alternative protein sources with the growth of the human population and increasing ecological awareness, the rearing of yellow mealworm larvae (Tenebrio molitor) is a promising option for the production of sustainable protein. The article presents a comprehensive approach to planning and scheduling the production of yellow mealworm larvae in a small enterprise, focusing on the organizational, ...

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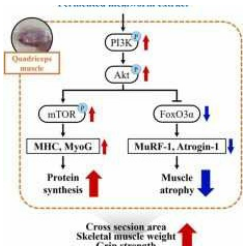
tenebrio molitor



12/08/2024

Anti-muscle atrophy effect of fermented Tenebrio molitor larvae extract by modulating the PI3K-Akt-mTOR/FoxO3α pathway in mice treated with dexamethasone - Han et al.

This study investigated the anti-sarcopenic effect of fermented Tenebrio molitor larvae (mealworms) extract (FME) in both dexamethasone (DEX)-treated ...

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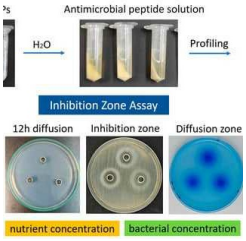
tenebrio molitor



09/08/2024

Principle Investigation and Method Standardization of Inhibition Zone Assay Based on Antimicrobial Peptides Extracted from Black Soldier Fly Larvae - Shen et al.

The black soldier fly is a valuable resource insect capable of transforming organic waste while producing antimicrobial peptides (AMPs). The inhibition zone assay (IZA) is a method used to demonstrate the antimicrobial activity of AMPs. This study aimed to examine the experimental principles and establish a standardized IZA method. Results indicated that the AMPs extract consisted of proteins ranging in molecular weights from 0 ...

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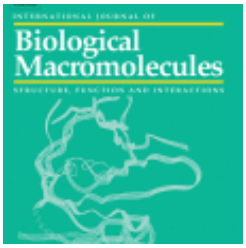
hermetia illucens



03/08/2024

Tenebrio Molitor breeding rejects as a high source of pure chitin and chitosan: Role of the processes, influence of the life cycle stages and comparison with Hermetia illucens - Azzi et al.

This work valorizes rejects from Tenebrio Molitor TM breeding through the production of chitin and chitosan. Two processes are proposed for extracting...

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hermetia illucens tenebrio molitor

02/08/2024

Stenotrophomonas maltophilia G17: Potential antifungal agent isolated from the gut of black soldier fly larvae against Ganoderma boninense - Santoso et al.

Oil palm (Elaeis guineensis Jacq.) is the primary source of foreign exchange in Indonesia's plantation sector. However, these plants are very vulnerab...

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hermetia illucens

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- Prospecting of the Antioxidant Activity from Extracts Obtained from Chañar (Geoffroea decorticans) Seeds Evaluated In Vitro and In Vivo Using the Tenebrio molitor Model - Pereira Silva et al.
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- Leftover bread as a potential feed additive: Impact on growth, fatty acid content, and antioxidant properties in Tenebrio molitor larvae - Al-Mekhlafi et al.
- Revalidation of Growth Kinetics Model of Black Soldier Fly Larvae (Hermetia illucens) with Fish Industrial Waste Substrate and Its Utilization - Prasetya et al.

Product - media

- Here’s 7 takes on edible insects in S’pore, from cricket protein bars to mealworm margaritas
- BioCric: The Science-Backed Startup Leveraging Research and Development to Produce Sustainable Insect Protein
- Pembrokeshire County Council confirms no plans for insect protein rollout in schools
- Reploid: Revolutionizing insect protein production
- Novel Protein Sources: Impact of insect protein meals on pet food palatability
- Breakthrough Vic invests $2.5m in insect protein pioneer, Viridian - Food & Drink Business
- Insect protein producer secures an investment of $58 million
- Insect meal no longer niche but cost concerns linger
- Extraction method could tailor insect protein benefits | Feed & Grain
- Aquafeed.com | Insect protein enhances trout immunity performance and lowers mortality
- Aquafeed.com | Arthro Biotech becomes first Indian BSF insect protein producer with EU TRACES certification
- Loopworm poised to export insect protein to Europe
- Zimbabwe explores potential of insect larvae as feed ingredients
- Shrimp fed diet including Protix insect meal, Veramaris algal oil being sold at Dutch retailer Albert Heijn
- Farmchemie launches commercial insect meal farm in Sri Lanka
- New partnerships in the study of insect-based feed
- Insects could be the future of animal feed - CBC.ca

- Beyond The Headlines: Bühler launches insect protein center, FAO-EU food security deal
- Nasekomo upgrades neonate tech to boost insect protein production

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- Method for Obtaining High-Energy Feed Protein and Fat from Insects - Maltseva et al.
- Partial or complete replacement of soybean meal with black soldier fly larvae meal improves feed efficiency in laying hens between 22 to 30 weeks of age - Veldkamp et al.
- Dietary full-fat or defatted black soldier fly larvae can replace protein sources with no detrimental effect on growth performance or intestinal health of nursery pigs - Song et al.
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- Possible presence of the allergenic ingredients milk and wheat in edible insects produced on milk and wheat rich substrates - Smits et al.
- Microbial and chemical analysis of independently produced batches of Tenebrio molitor larval powder - Machona et al.
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- Impact of Replacing Fish Meal With Black Soldier Fly (Hermetia illucens) Meal on Diet Acceptability in Juvenile Nile Tilapia: Palatability and Nutritional and Health Considerations for Dietary Preference - Gomes de Oliveira et al.
- Insect Meal as a Dietary Protein Source for Pheasant Quails: Performance, Carcass Traits, Amino Acid Profile and Mineral Contents in Muscles - Flis et al.
- Economic impact of inclusion of black soldier fly products in broiler diets: A comparison between conventional and higher animal welfare production systems in the Netherlands - Leipertz et al.
- Drying Methods for Black Soldier Fly (Hermetia illucens) Larvae as a Feed Ingredient for Pigs Affect In Vitro Nutrient Disappearance - Oh et al.
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- Replacement of fish meal with defatted black soldier fly (Hermetia illucens) in diet of Pacific white shrimp (Litopenaeus vannamei): growth, flesh quality and transcriptome - Zheng et al.
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- Dietary astaxanthin alleviates negative changes of flesh quality, long chain unsaturated fatty acids content and muscle growth on rainbow trout (Oncorhynchus mykiss) induced by black soldier fly oil via mammalian target of rapamycin and AMP-activated protein kinase α pathway: Evidence of transcripts and proteomics - Chen et al.
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- Comparative efficacy of amino acid availability and peptidomic analysis of alternative proteins from different sources under dynamic in vitro protein digestion - Zhou et al.

- Live black soldier fly larvae as environmental enrichment for native chickens: implications for bird performance, welfare, and excreta microbiota - Bellezza Oddon et al.
- Interactions between feed protein source and feeding frequency on growth performance and health status of largemouth bass (Micropterus salmoides) - Liu et al.
- Full-fat black soldier fly larvae meal and yellow mealworm meal: Impact on feed protein quality, growth and nutrient utilization of Atlantic salmon (Salmo salar) post smolts - Perera Willora et al.
- Freezing storage combined with freeze-drying of black soldier fly (Hermetia illucens) larvae to produce oil rich in free lauric acid - Hurtado-Ribeira et al.
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- Assessing the performance, egg quality, serum analysis, heavy metals and essential trace metals accumulation in laying hen eggs and tissues fed black soldier fly (Hermetia illucens) larvae meal - Khan et al.
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- Effect of larval instar and post-harvest treatments on heavy metals in BSFL and frass reared on commercial food waste streams - Alagappan et al.
- Willingness of West African Consumers to Buy Food Produced Using Black Soldier Fly Larvae and Frass - Traore et al.
- Exploring insect meals as novel sources of vitamin D: evaluation of vitamin D precursors, biofortification by UV-B exposure, and in vivo efficacy - Grundmann et al.
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- Quality properties of salt-fermented mealworms (Tenebrio molitor larvae) with added millet - Kim et al.
- Metabolizable Energy Value of Fat and Meals Obtained from Black Soldier Fly Larvae (Hermetia illucens) for Broiler Chickens - Chobanova et al.
- Sorption isotherms of edible insect's flours: mathematical modeling and hysteresis - Tejada-Ortigoza et al.
- The effect of dietary full-fat Hermetia illucens larvae meal on growth performance and intestine physiology in largemouth bass (Micropterus salmoides) - Dong et al.
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- Performance, egg quality and organ traits of laying hens fed black soldier fly larvae products - Dörper et al.
- Comparison of the In Vitro Iron Bioavailability of Tempeh Made with Tenebrio molitor to Beef and Plant-Based Meat Alternatives - Wilson et al.
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- Partial replacement of soybean with alternative protein sources: Effects on meat quality, sensory attributes, and fatty acids and amino acids content of breast meat of a local chicken strain - Yalçin et al.
- Effects of dietary replacement of fishmeal by defatted Tenebrio molitor meal, Clostridium autoethanogenum protein meal and Chlorella vulgaris meal on the freshness of turbot (Scophthalmus maximus) during chilled storage - Qi et al.
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- A decade of advances in black soldier fly research: from genetics to sustainability - Athanassiou et al.
- Unlocking the potential of black soldier fly frass as a sustainable organic fertilizer: A review of recent studies - Manan et al.
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- The Impact of Drying Methods on the Quality of Blanched Yellow Mealworm (Tenebrio molitor L.) Larvae - Bogusz et al.
- Breaking down barriers: live or dehydrated dietary whole black soldier fly larvae supplementation in slow growing chickens preserve meat quality and sensory traits - Fiorilla et al.
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- Insect-rearing byproduct offers new broiler feed alternative
- Aquafeed.com | Insect ingredients: A turnkey solution for low-footprint aquaculture feed
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- Fatty acid composition and anti-cancer activity of essential oil from Tenebrio Molitor larvae in combination with zoledronic acid on prostate cancer - Askari et al.
- Effect of temperature on growth, metabolism, and gas exchange in Hermetia illucens larvae reared under commercial and laboratory conditions - Schøn et al.
- Better Ce (III) Sorption Properties of Unprocessed Chitinous Waste from Hermetia illucens than Commercial Chitosans - Bąk et al.
- Impact of salting-in/out assisted extraction on rheological, biological, and digestive, and proteomic properties of Tenebrio molitor larvae protein isolates - Jiang et al.
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- Exploring the chemistry and composition of black soldier fly eumelanin, a material for a circular economy - Mostert et al.
- Yellow mealworm: effects of adults breeding density on adults and larvae performances from an industrial perspective - Palumbo et al.
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- Stenotrophomonas maltophilia G17: Potential antifungal agent isolated from the gut of black soldier fly larvae against Ganoderma boninense - Santoso et al.