The Role of Fly Meal in the Diet for Grow-Out Gilthead Seabream

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DESCRIPTION

Aquaculture has increasingly become a vital source of protein for the growing global population. Among the many species farmed, the Gilthead seabream (*Sparus aurata*) is notable due to its high market value and demand. Traditionally, fish meal has been the primary protein source in aquafeeds. However, the sustainability and cost of fish meal have prompted the search for alternative protein sources. One such alternative gaining traction is fly meal, particularly from the black soldier fly (*Hermetia illucens*).

Fly meal is derived from the larvae of the black soldier fly, which is rich in protein and other essential nutrients. The use of insect meal in aquafeeds is a relatively novel approach but one that holds substantial potential. The larvae can be raised on organic waste, making the production of fly meal not only sustainable but also environmentally friendly. This aligns with the circular economy concept, where waste materials are recycled back into the production cycle. Fly meal offers a balanced nutritional profile that is beneficial for the growth and health of Gilthead seabream. It contains high levels of protein, essential amino acids, lipids, and minerals. The protein content typically ranges from 40% to 50%, making it a competitive alternative to fish meal. Moreover, the amino acid profile of fly meal is comparable to that of fish meal, ensuring that the dietary needs of the seabream are met. Studies have demonstrated that including fly meal in the diet of Gilthead seabream can support optimal growth rates. The digestibility of fly meal protein is high, allowing the fish to efficiently utilize the nutrients for growth and development. Feed Conversion Ratio (FCR) which measures the efficiency with which the fish convert feed into body mass, is an important indicator of feed quality. Diets incorporating fly meal have shown favorable FCR values, indicating that fly meal is an efficient feed ingredient. The inclusion of fly meal in seabream diets has been associated to improved health and immune responses.

The larvae are rich in antimicrobial peptides and chitin, which can enhance the fish's immune system and protect against pathogens. The production of fly meal is sustainable and has a lower environmental impact compared to fish meal. Utilizing organic waste to rear black soldier fly larvae reduces waste disposal issues and the ecological footprint of aquafeed production. The use of insect meal in aquafeeds is subject to regulatory approvals in various regions. Ensuring that fly meal meets the safety and quality standards set by regulatory bodies is essential for its acceptance.

The acceptance of insect-based feeds by consumers can influence the marketability of fish products. Educating consumers about the sustainability and nutritional benefits of fly meal can help mitigate any apprehensions. Scaling up the production of fly meal to meet the demands of the aquaculture industry is a logistical challenge. Developing efficient rearing and processing methods is significant for making fly meal a viable alternative on a large scale.

The cost of producing fly meal must be competitive with fish meal and other alternative protein sources. Innovations in production technology and economies of scale can help reduce costs and make fly meal economically attractive. Ongoing research is focused on optimizing the inclusion levels of fly meal in seabream diets and understanding its long-term effects on fish health and product quality. Researchers are also investigating the use of fly meal in combination with other alternative protein sources to formulate balanced and cost-effective diets. Further studies are needed to explore the bioavailability of nutrients in fly meal and its impact on the sensory qualities of seabream fillets. Collaborations between academia, industry, and regulatory bodies can drive innovation and prepare for the successful integration of fly meal into aquafeeds. Fly meal presents a promising alternative protein source for the aquaculture industry, particularly for the grow-out phase of Gilthead seabream. Its nutritional benefits, coupled with environmental sustainability, make it an attractive option. However, addressing challenges related to regulatory approvals, consumer perception, production scalability, and economic viability is essential for its widespread adoption. With continued research and development, fly meal has the potential to play a significant role in the future of sustainable aquaculture.

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