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Editorial Note

# BSFL As Alternative Halal Animal Feed

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**Abstract:** Black soldier fly larvae (BSFL) as a bioconversion agent in converting organic waste into nutrient-rich biomass makes it a valuable alternative and sustainable protein source for animal feed formulation, addressing the high cost of traditional protein sources. Despite its nutritional benefits, the halal status of animals fed with BSFL is primarily concerned due to the impurity of larvae consumption. This study discusses the halal implications of feeding livestock with BSFL according to the Islamic jurisprudence. Findings suggest that animals predominantly fed with BSFL could be classified as al-Jallalah as feed of these animals are filth, requiring a quarantine process to eliminate any unpleasant effects on the animal's meat or milk. If these effects are removed, the animals are permissible for consumption. The study concludes that while BSFL consumption is forbidden for mankind, its use as animal feed is permissible under the Islamic law, with necessary precautions are taken to maintain the halal status of the animals.

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Black Soldier Fly Larvae (BSFL) are widely recognized as bioconversion agents in converting diverse forms of waste, including food and agricultural waste, deteriorated fruits and vegetables, animal manure and human feces into valuable protein and fat-rich biomass, which makes them ideal for waste management and as an alternative protein source in animal feed (Lalander *et al*., 2019; Liu *et al*., 2019; Rindhe *et al*., 2019). BSFL shows potential as a feed and food ingredient because it has a high nutritional content, such as enzyme, chitin, medium-chain fatty acid, and antimicrobial peptides, and can be used as a functional food ingredient. The nutritional composition of the larvae, consisting of around 40% protein and

30% fat are used to produce animal feed in reducing the reliance on costly protein sources, which are fishmeal and soybean meal (Purnamasari & Khasanah, 2022).

BSFL are insects that consume various types of organic waste, which are considered impurities according to Shariah law. Most Islamic scholars, including those from the Shafi'i, Hanafi, and Hanbali schools of thought, prohibit the consumption of insects due to their association with impurity and filth (*al-najs*) (Saidin *et al*., 2019). Meanwhile, BSFL are primarily marketed as animal feed and are widely used for feeding livestock, poultry, and aquaculture. This raises questions about the halal status of animals that consume BSFL and whether they can be considered permissible for consumption by Muslims. Allah The Almighty says in the al-Quran: "*And permits for them what is lawful and forbids to them what is impure*" (al-Quran 7:157). The use of impure animal feed can affect the color, odor, and taste of the milk or meat produced by these animals, rendering them impure and unpleasant, thus forbidden for consumption. To ensure the halal status of consumable animals, any uncertainties *(shubhah)* regarding the feed formulation should be eliminated. Halal animals that are primarily fed with BSFL are classified as *al-Jallalah* if most of their diet consists of BSFL or if they are consistently fed with BSFL over an extended period (Muflih *et al*., 2017). This feeding habit can lead to an unpleasant odor, which is the basis for the prohibition of their consumption. The fundamental ruling on *al-Jallalah* animal (coprophagia or coprophagy) is based on the hadith narrated by Ibn Umar: "The Messenger of Allah PBUH prohibited eating the animal which feeds on filth and drinking its milk" (Abu Dawud, Hadith no: 3785). However, if animals are fed with BSFL inconsistently, they are not classified as *al-Jallalah*, as this does not cause any unpleasant changes in the eggs, milk, or meat of the animals. As long as there are no signs of *al-najs* in terms of color, odor, or taste of the milk, eggs, or meat, the animals are not categorized as *al-Jallalah* when fed with BSFL (Jamaludin *et al*., 2014, 2023).

The *'illah* (reason) for the prohibition of consuming *al-Jallalah* animals stems from their consumption of impure or filthy substances, which alter the fundamental characteristics of the raw material, including its color, taste, and smell. This *'illah* transforms the meat, eggs, and milk of such animals from *halal* (permissible) to *haram* (prohibited). Therefore, when the *'illah* is removed through quarantine or similar methods, the prohibition on consuming the animal also ceases. According to the legal maxim, if a ruling applies because of an *'illah*, it ceases to apply when that *'illah* disappears (الحُكْم إِذَا زَالَتِ العِلَّةُ زَالَ). Consequently, there is no longer a basis to prohibit this animal, as it is fundamentally halal, and its prohibition is due to the presence of impurities. When these impurities are removed, the prohibition likewise ceases (Jamaludin *et al*., 2011). In a fatwa issued by the Indonesian Ulama Council (MUI) on May 15, 2019, it was determined that BSFL fall under the category of *al-hasyarat*

(insects). The MUI concluded that consuming insects is *haram* (forbidden), and therefore, BSFL is not permissible for human consumption. However, cultivating BSFL for purposes such as animal feed is considered permissible (lawful) (Wan Khairuzzaman *et al*., 2021).

In conclusion, the use of BSFL as animal feed is permissible, while consumption of BSFL by Muslims is forbidden according to Shariah law. When halal animals are consistently fed with BSFL, they are classified as *al-Jallalah* and must undergo a quarantine process to eliminate any unpleasant odor and change in their meat, eggs, or milk. However, if animals are inconsistently fed with BSFL, they are not classified as *al-Jallalah*. The primary reason for the prohibition of consuming *al-Jallalah* animals is the alteration in the quality of their meat or milk, rendering it impure and unpleasant. If this reason is eliminated by conducting a quarantine process for *al-Jallalah* animals, then these animals become permissible for consumption by Muslims. This is because the original ruling on these animals is halal, and the prohibition occurs due to the presence of impurities.

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