Converting palm oil wastes into bio-protein

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After the fermentation process, protein levels increased more than three fold in palm oil decanter cake. Credit: Shahril Affandi Khairuddin via 123rf

Palm oil wastes could provide an alternative, low cost and locally available source of bio-proteins for animal feed, according to a recent study published in the Pertanika *Journal of Tropical Agricultural Sciences* (*JTAS*).

Animal feeds with high nutritional content help determine the productivity of livestock. However, due to increased competition for human food, the animal feed industry needs cheaper, readily available protein ingredients. Agro-industrial by-products such as palm oil wastes are a suitable candidate for animal feed because of their high fibre and carbon content, although they lack proteins and vitamins.

Fungi or other microorganisms are normally used to convert agro-industrial wastes into bio-proteins. Bio-proteins are rich in nutrition, easily digestible and economical, and are not used for human consumption.

To seek a better protein source from palm oil wastes, researchers from Universiti Malaysia Perlis investigated the potential of palm pressed fibre (PPF) and palm oil decanter cake (a solid waste produced from milling palm) for bio-protein production. They fermented PPF and palm oil decanter cake using a fungus called Aspergillus terreus UniMAP AA-1.

They found that after the fermentation process, protein levels increased more than three fold in palm oil decanter cake (from 146mg to 493mg per litre) compared to a 2.5 fold-increase in PPF (from 159mg to 401mg per litre).

Furthermore, the team reported that by increasing the amounts of palm oil decanter cake and fungi used in fermentation, the decanter cake could produce bio-protein levels of up to 1683mg per litre.

The researchers say this study provides preliminary data to further optimise the production of bio-proteins from palm oil wastes as potential ingredients for animal feed.

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