PALM-BASED BODY WASH

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ising environmental concerns and stricter regulatory frameworks are driving the demand for biobased raw materials across various sectors, such as laundry, personal care and cosmetics. The growing demand for bio-based raw materials in particular surfactant, is expected to boost the demand for methyl ester sulphonates (MES), a renewable, palm oil derived surfactant, eco-friendly and better performance and available locally. MES offers several advantages such as high detergency in hard water conditions, readily biodegradable nature and low toxicity, which give MES an advantage over their traditional rival surfactant.

MES, which is derived from the sulphonation of palm oil-based methyl ester, offers interesting possibilities as a surfactant. Surfactants are amphiphilic substances with special properties and structures that allow a reduction in interfacial tension, which permits an increase in molecule solubilisation. As a versatile surfactant, MES functions as a cleanser, emulsifier, dispersant, penetrator or thickener making it as essential component in modern personal care formulations. It has good surface-active properties, excellent detergency performance in and is less sensitive to water hardness than conventional surfactants.

In line with MPOB's commitment to diversify the applications of palm-based derivatives, the incorporation of MES in body wash formulations and other potential personal care products underscores its potential as sustainable, environmental-friendly alternative surfactant for the personal care industry.

NOVELTY OF PRODUCT

The newly formulated body wash products (Figure 1) contain a locally produced palm methyl ester sulphonates (MES), offering nonirritant and skin-friendly personal care products. It replaces the function of soap to remove impurities and clean excess oil on the skin. The developed formulation exhibits good foaming power, just like a commercial product. The body wash products remain stable after being stored at room temperature and 40°C for more than three months. *In vitro* skin irritation test results (*Figure* 2) using the SkinEthicTM RHE model (OECD, 2021) show that the palm-based body wash is non-irritating and skin-friendly. The body wash products also passed microbiological tests (*Table 1*) and are safe to use.



Figure 1. Formulated body wash products containing MES with various colours.







Note: NC - negative control; PC - positive control; SDS - sodium dodecyl sulphate.

Figure 2. RHE tissue viability (%) of body wash containing MES (BW4) and commercial sample (COM).

Test	Test item (in 1 g) —	Acceptance criteria	
		ISO 17516	ASEAN guideline
Aerobic mesophilic bacteria	< 1.00E+02 CFU	PASS	PASS
Yeast and mould	< 1.00E+02 CFU	PASS	PASS
Detection of <i>Pseudomonas aeruginosa</i>	Absence	PASS	PASS
Detection of Staphylococcus aureus	Absence	PASS	PASS
Detection of Candida albicans	Absence	PASS	PASS

TABLE 1. RESULTS OF MICROBIOLOGICAL TEST ON FORMULATED BODY WASH PRODUCTS CONTAINING PALM MES

Note: CFU - colony forming unit.

ADVANTAGES

- Utilises locally sourced renewable palm-based raw materials;
- Opportunity to establish a unique regional personal care brand;
- Offers customisable formulations to meet specific preferences; and
- Promotes sustainability and environmental responsibility in the personal care industry.

MARKET ANALYSIS

The body wash market has experienced a significant transformation over the past few

years, driven by changing consumer preferences and an increasing awareness of personal hygiene. In 2022, the body wash market size was valued at USD19.5 billion and is projected to reach USD28.8 billion by 2030, with a CAGR of 6.4% from 2024 to 2030 (Verified Market Reports, 2025). This growth reflects a broader trend of increasing awareness regarding personal care, where consumers are opting for liquid body cleansers over traditional bar soaps. Liquid soap products are emerging as a popular and convenient option for a quick and refreshing cleanse, offering a modern alternative to traditional bar soaps. Unlike bar soaps, which are typically produced through the saponification of fats such as vegetable oils or animal fats, liquid soaps are formulated with surfactants, water and other chemical components that bind the ingredients effectively. This composition makes liquid soaps a preferred choice over traditional bar soaps for many consumers.

ECONOMIC ANALYSIS

The estimated production cost for palm-based body wash is between RM5 to RM10 per kg, depending on the formulations. This competitive cost structure supports the commercialisation and market penetration potential.

REFERENCES

Organisation for Economic Co-operation and Development [OECD] (2021, June 17). Test

No. 439: In Vitro *Skin Irritation: Reconstructed Human Epidermis Test Method,* OECD. Retreived September 5, 2024, from https://www.oecd. org/en/publications/2021/06/test-no-439in-vitro-skin-irritation-reconstructed-humanepidermis-test-method_g1g59b2f.html

Verified Market Research. (2025). Global body wash market size by product type (gel body wash, cream bodywash), by user demographics (gender, age group), by skin type (normal skin, dry skin), by purchase channel (online retail, offline retail), by price range (low-end, mid- range), by geographic scope and forecast. https://www.verifiedmarketreports. com/product/body-wash-market/ For more information, kindly contact:

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