

**TECH OFFER**

**Tropical Fruits Extract and Melatonin Encapsulated in Nanovesicles Sleeping Masks**



**KEY INFORMATION**

TECHNOLOGY CATEGORY:

Personal Care - Cosmetics & Hair

Personal Care - Wellness & Spa

TECHNOLOGY READINESS LEVEL (TRL): **TRL6**

COUNTRY: **THAILAND**

ID NUMBER: **TO175024**

**OVERVIEW**

Melatonin is an antioxidant with numerous medical and nutraceutical applications. It plays an important role in the body and assists in synchronising circadian rhythms and sleep. Melatonin is most commonly administered orally at a dosage of 2 mg for treating primary insomnia. Beside melatonin tablets, consumption of tropical fruits such as pineapples, oranges and bananas was also found to result in elevated melatonin concentration in the human body. However, the effective absorption of melatonin through oral administration varies from individuals, and diabetics or the elderly would not be able to consume enough of such fruits to achieve the required melatonin concentration for treating insomnia.

Melatonin is also suitable for transdermal delivery due to its low required dose, short biological half-life, low molecular weight. This technology, in the form of a sleeping mask, is enriched with tropical fruit extracts such as pineapples, oranges, and bananas, combined with melatonin encapsulated in nanovesicles. Beyond its revitalising impact on facial skin, this dual-purpose mask also promotes tranquil sleep, offering an appealing solution for individuals seeking respite from sleep troubles without resorting to conventional melatonin tablets.

The technology is particularly advantageous for those navigating health restrictions, such as prolonged use of melatonin tablets or managing high blood sugar, and for those who prefer to regulate sugary fruit intake.

## TECHNOLOGY FEATURES & SPECIFICATIONS

This technology comprises of a proprietary blend encompassing specific constituents and a composition that has been substantiated through clinical investigation. Rigorous safety assessments on the mask's formulation, involving 60 healthy volunteers, confirmed a non-irritating score of 0.00.

The fruit extracts used in this blend are gathered using environmentally friendly "green solvents" through the utilisation of a cold extraction method. The melatonin used is also originating from the fruit extract and is encapsulated within nanovesicles. This encapsulation technology enhances melatonin release, skin permeation, and formulation stability. In vitro studies indicate a melatonin release rate of 50% after 15 minutes and 100% after 30 minutes, and a cumulative skin permeation of >200 ng/ml in 8 hours.

## POTENTIAL APPLICATIONS

- Skincare products, e.g. sleeping mask, serum
- Cosmeceutical, e.g. rejuvenating serum
- Health care products, e.g. alternative sleep aid

## MARKET TRENDS & OPPORTUNITIES

The global sleep aids market size was valued at US\$59.8 billion in 2020, and is projected to reach \$111.9 billion by 2030, registering a CAGR of 6.9% from 2021 to 2030 (Allied Market Research, 2023).

The global beauty facial mask (BFM) market is estimated at US\$6.8 billion in 2022 and is expected to expand at an impressive CAGR of 5.1% during the forecast years of 2022-2032 (Fact.MR, 2023).

The global melatonin market is expected to experience significant growth, exceeding US\$217.9 million by 2033, with demand driven by growing awareness among consumers about benefits of melatonin supplements. It is likely to expand at 8.2% CAGR during 2023 to 2033 (Future Market Insights, 2023).

## UNIQUE VALUE PROPOSITION

This technology provides an innovative alternative to conventional sleeping aids through the utilisation of extracts from tropical fruits such as pineapples, oranges, and bananas, combined with plant-based melatonin encapsulated in nanovesicles for enhanced delivery into the skin.