The effects of *Michelia alba* oil against mould on brown rice and assessing the brain response using electroencephalogram (EEG)

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Abstract

The objective of this study was to develop antifungal fragrant brown rice using the vapour phase of *Michelia alba* oil and to understand the effects of fragrant brown rice on consumer reactions using an electroencephalography (EEG) technique. The effect of *M. alba* oil vapour (300–900 µL/L) on the growth of moulds was studied in brown rice. Then, optimisation of the *M. alba* oil vapour (300–900 µL/L) was studied through sensory evaluation. Next, EEG was used to investigate the effect of fragrant cooked brown rice on human brain activity. In addition, the key components of *M. alba* oil on the sensory effects were determined. The results indicated that *M. alba* oil vapour ≥ 450 µL/L provided effective antifungal activity against natural moulds on brown rice for at least 90 days of storage at 25 °C at 100% RH. Furthermore, the optimal concentration of *M. alba* oil vapour for enhancing consumer preference and acceptance of cooked brown rice was 300–600 µL/L with a rejection threshold of 2,052 µL/L. Moreover, it was found that linalool was the main key component and caryophyllene and β-elemene were the minor components affecting the sensory quality enhancement. Interestingly, the EEG results showed that fragrant cooked brown rice could increase the power of alpha and beta waves in the human brain, indicating anti-stress effects and a relaxed mood. Therefore, *M. alba* oil vapour demonstrated good potential to enhance consumer acceptance and preference for cooked brown rice while controlling the significant growth of moulds in brown rice.