Effects of Fungal Growth, and Post-harvesting Techniques on Total Phenolic Content, Total Flavonoid Content and Oil content of *Myristica fragrans*

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Myristica fragrans (Nutmeg) is one of the significant exporting spice crops in Sri Lanka. The aim of this study was to examine the impacts of post-harvest methods and fungal growth on the oil, phenol, and flavonoid contents of *M. fragrans*. Seeds (1200) were divided into two groups based on the nature of fruit during harvesting (closed or splitopened) and the nature of fungal growth; with fungi or without fungi. They were again divided into two portions, and one was blanched at 80 °C for 3 minutes. Blanched and unblanched samples were dried using three different drying methods such as cabinet drying, greenhouse solar drying, and open sun drying. Phenolic, flavonoid and oil contents were determined using the Folin-Ciocaltue, the aluminium chloride colorimetric, and the hydrodistillation methods, respectively. This study revealed that nature of fruit during harvesting, blanching, drying methods, and fungal growth had a statistically significant (p<0.05) impact on the oil content and phytochemicals in M. fragrans. The oil content varied from 2% to 12%, with greenhouse solar-dried and closed nutmeg fruits exhibiting significantly (p < 0.05) higher oil content. The cabinetdried samples showed significantly (p<0.05) lower oil content. Total flavonoid content ranged from 21 to 117 mg of quercetin equivalents per gram of dried kernel, while total phenolic content ranged from 20 to 135 mg of gallic acid equivalents per gram of dried kernel across the different treatment groups. The greenhouse solar-dried samples and open sun-dried samples resulted in higher total phenolic and flavonoid contents, respectively. Importantly, the blanching treatment significantly (p<0.05) decreased the total phenolic content, while fungal growth significantly (p<0.05) reduced phytochemicals. Therefore, it is essential to note that making it free from fungal infections and applying good post-harvest practices are critical for preserving the quality of nutmeg.

Keywords: Myristica fragrans, Oil content, Phytochemicals, Post-harvest methods

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