

Quality Evaluation of Water Apple Green Tea at Different Drying Temperature and Particle Sizes

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Structured Abstract

Background: Green tea is known as the second most consumed beverage in the world due to its possible health benefits as it contains a significant number of phenolic compounds. This study utilized water apple leaves which are considered as agricultural waste as green tea that can be consumed. The purpose of this study is to determine the physicochemical attributes of green tea produced from water apple at different drying methods and particle sizes.

Methods: The water apple leaves were processed into green tea, however, they differ in the method of drying and particle sizes. There are two drying methods which are oven drying and microwave drying methods, while the particle size of the tea leaves was categorised as two which are $> 2\text{mm}$ and $< 2\text{mm}$. The physical attributes that were determined are moisture content, pH measurement and colour analysis, whereas the chemical attributes that were determined are total phenolic content, antioxidant activity and caffeine content. The chemical attributes of the water apple green tea were determined using an ultra-visible spectrophotometer at their respective wavelength.

Results: The study demonstrates that microwave drying is optimal for achieving superior moisture quality and pH, whereas oven drying is preferable for preserving colour. The optimal particle size that exhibits superior physical characteristics is less than 2 mm. Chemical properties are most favourable in samples that have been oven-dried and have a particle size of less than 2mm.

Conclusion: Ultimately, the most appropriate drying method for processing water apple green tea is oven drying, as it has a lesser impact on the polyphenols and antioxidants in comparison to microwave drying methods. The optimal particle size for tea leaves is below 2mm. This size ensures that the tea has low moisture content, an appropriate pH value, a desirable colour, a high concentration of polyphenols and antioxidants, and a low amount of caffeine.

Keywords: Green Tea, Water Apple, Drying Method, Particle Size, Quality Attributes

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