



## Simple-colorimetric method for determination of total flavonoids in Miang, a traditional fermented tea leaf (*Camellia sinensis* var. *assamica*)

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Miang is traditional product processed from fermentation of tea leaf of *Camellia sinensis* var. *assamica*. The assam-tea leaves and its products contain with flavonoids and polyphenols, which are a type of anti-oxidant compounds. Thus, flavonoid content could indicate the quality of fermented assam-tea products. Nowadays, simple familiar and cost-effective methods are not available for determination of flavonoids. In this work, simple and portable colorimetric detection for determination of total flavonoids in Miang will be presented. The red color solution was performed from the reaction of  $\text{AlCl}_3$ ,  $\text{NaNO}_2$  and  $\text{NaOH}$  reagents and flavonoid compounds. Catechins were used as standard flavonoids. The RGB value of color solution was monitored by mean of a free application on a mobile phon. The optimization of chemical reaction and monitoring were studied. The suitable volume ratio of  $\text{AlCl}_3$  ( $5.50 \times 10^2$  mM),  $\text{NaNO}_2$  ( $3.00 \times 10^3$  mM) and  $\text{NaOH}$  ( $2.50 \times 10^3$  mM) for chemical reaction performing was 20:10:50  $\mu\text{l}$ . In addition, the familiar and innovative dark box for monitoring was constructed. The method could determine the total flavonoids content in a range of 0-0.45 mM with  $r^2$  of 0.9915. The detection limit of this method was  $3.45 \times 10^{-2}$  mM. The developed method was simple portable and cost-effective for the Miang-quality control using by local entrepreneur.

**Keywords** Total flavonoids, colorimetric method, Assam tea, *Camellia sinensis* var. *assamica*