Determination and optimization of flavonoid and extract yield from brown mango using response surface methodology.

ABSTRACT

The optimum extraction conditions to obtain the highest flavonoid content and extract yield from Mangifera pajang pericarp (MPP) were analyzed using response surface methodology (RSM). A full factorial central composite design was used to investigate the effects of ethanol concentration (20-80%), temperature (30-65°C) and liquid to solid ratio (20-50 mL/g) on the recovery of extract yield and flavonoids. A second order polynomial model produced a satisfactory fitting of the experimental data with regard to extract yield (R² = 0.9890, p < 0.0001) and flavonoids (R² = 0.9652, p < 0.0001). The optimum conditions to obtain higher extract yield, were 54%, 50°C, and 42.4 mL/g, while for flavonoids were 68%, 57°C, and 20.2 mL/g, respectively. The experimental values agreed with those predicted with 99% and 96% confidence interval for extract yield and flavonoids respectively. This indicates the suitability of RSM in optimizing the extraction of flavonoids and extract yield from MPP.

Keyword: Flavonoid content; Mangifera pajang; Optimisation