

OPTIMISATION OF EXTRACTION OF PHENOLIC  
COMPOUNDS FROM *Ananas comosus* PEELS  
USING RESPONSE SURFACE  
METHODOLOGY

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## ABSTRACT

Pineapples produce a significant amount of waste during processing. However the by-products are rich in useful phenolic compounds that can be used to replace artificial nutraceuticals. Solvent concentration, extraction time, and extraction temperature were investigated. Thus the objective of this study was to optimise the extraction parameters in order to obtain the maximum yield of total phenolic compounds from pineapple peel extract. Single factor experiments were used to determine the best solvent type, solvent concentration, the range of extraction time and extraction temperature. Response surface methodology (RSM) was used to optimise the extraction variables for the best extraction of phenolic compounds from pineapple peels. To examine the total phenolic content of the extract, Folin-Ciocalteu's reagent essay was used while 2,2 Diphenyl-picrylhydrazyl (DPPH) assay and Ferric iron reducing antioxidant power (FRAP) assay were used to examine the total antioxidant capacity and reducing power respectively. Experimental results were compared against the predicted values using Design Expert (6.0.10) statistical software. Analysis of variance (ANOVA) was used for the analysis of results. Results showed that methanol was the best solvent type compared to acetone and ethanol. The most suitable concentration of methanol which retained the most phenolic compounds was 61.89%. According to the results the optimum extraction time and extraction temperature for the total phenolic content was 126.51 min and 34.05°C respectively. Furthermore,  $R^2$  also showed that the predicted model was acceptable.

