



## PROCESS OPTIMIZATION OF POLYPHENOL EXTRACTION FROM MULBERRY FRUIT BY ULTRA-SONIC ASSISTED RESPONSE SURFACE METHODOLOGY

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### ABSTRACT

A Box–Behnken design of Response Surface Methodology (RSM) with ultra-sonic assisted extraction (UAE) was conducted to analyze the effect of mass concentration range (1-3 g/l), ultrasonic power (60-120W), ultrasonic time (30-50 min), pH range (5-9) and extraction temperature (40-60 °C) on the extraction of polyphenols from mulberry fruit. Plackett-Burman experimental design and steepest ascent experiment were adopted to optimize process conditions. Results indicated that among the selected factors, mass concentration of mulberry fruit, temperature and pH were the most influencing parameters for the extraction of polyphenols. UAE contributed for the high yield of phenol with the mulberry fruit concentration of 2.05 g/l, temperature of 56.8 °C and pH, 8.0. Under the optimal conditions, the total phenol content (TPC) extracted from mulberry fruit can reach up to 7.32 mg GAE/g. The experimental validity illustrated good fit of the optimized parameters for the extraction of polyphenols from mulberry fruit.

**Key words:** Mulberry fruit, polyphenol extraction, process optimization, RSM, ultra-sonic assisted extraction.