

Optimization of red pigment anthocyanin recovery from hibiscus sabdariffa by subcritical water extraction

ABSTRACT

The optimization of red pigment anthocyanin from roselle (*Hibiscus sabdariffa*) by subcritical water extraction (SWE) has not been the topic of a scientific investigation. Therefore, the objective of this paper was to establish the optimal parameters for obtaining the maximum yield, total anthocyanin compounds (TAC), total phenolic compounds (TPC), and total flavonoid compounds (TFC) by SWE utilizing a response surface methodology. The optimal conditions were 8.75 MPa, 393.54 K, and 4.89 mL/min, with a yield of 0.69 g/g, TAC of 927.74 mg/100 g, TPC of 39.54 mg/100 g, and TFC of 614.57 mg/100 g. High temperatures and flow rates are favorable for achieving a maximum yield. In contrast, a high temperature is suitable for obtaining high concentrations of anthocyanin, flavonoid, and phenolic compounds. This technique (SWE) recovers anthocyanin at a greater extraction rate than traditional methods; hence, SWE may be substituted for conventional methods for extracting anthocyanin.