

Optimization of the conditions for extraction of serine protease from kesinai plant (Streblus asper) leaves using response surface methodology.

ABSTRACT

Response surface methodology (RSM) using a central composite design (CCD) was employed to optimize the conditions for extraction of serine protease from kesinai (Streblus asper) leaves. The effect of independent variables, namely temperature (42.5, 47.5, X_1), mixing time (2-6 min, X_2), buffer content (0-80 mL, X_3) and buffer pH (4.5-10.5, X_4) on specific activity, storage stability, temperature and oxidizing agent stability of serine protease from kesinai leaves was investigated. The study demonstrated that use of the optimum temperature, mixing time, buffer content and buffer pH conditions protected serine protease during extraction, as demonstrated by low activity loss. It was found that the interaction effect of mixing time and buffer content improved the serine protease stability, and the buffer pH had the most significant effect on the specific activity of the enzyme. The most desirable conditions of 2.5 °C temperature, 4 min mixing time, 40 mL buffer at pH 7.5 was established for serine protease extraction from kesinai leaves.

Keyword: Extraction; Serine protease; Kesiani leaves; Response surface methodology.