Extraction of gelatin from salmon (Salmo salar) fish skin using trypsin-aided process: optimization by Plackett–Burman and response surface methodological approaches

ABSTRACT

Gelatin from salmon (Salmo salar) skin with high molecular weight protein chains (a-chains) was extracted using trypsin-aided process. Response surface methodology was used to optimise the extraction parameters. Yield, hydroxyproline content and protein electrophoretic profile via sodium dodecyl sulfate– polyacrylamide gel electrophoresis analysis of gelatin were used as responses in the optimization study. The optimum conditions were determined as: trypsin concentration at 1.49 U/g; extraction temperature at 45 C; and extraction time at 6 h 16 min. This response surface optimized model was significant and produced an experimental value (202.04 ± 8.64%) in good agreement with the predicted value (204.19%). Twofold higher yields of gelatin with high molecular weight protein chains were achieved in the optimized process with trypsin treatment when compared to the process without trypsin.