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Optimized Nitrogen Recovery and Non-Bitter Hydrolysates from Porcine Hemoglobin

[Shan-guang GUO](#)¹⁾, [Mou-ming ZHAO](#)¹⁾, [Chun CUI](#)¹⁾ and [Chun-hui ZHANG](#)²⁾

1) *College of Light Industry and Food Science, South China University of Technology (SCUT)*

2) *Shuang Hui Industry group Co., LTD*

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The combined effects of pH, temperature, buffer/substrate ratio, time and enzyme concentration on nitrogen recovery (NR) from porcine hemoglobin, a by-product of industrial abattoirs, with Pancreatin and Flavourzyme® 500MG enzyme mixture were characterized. The effect of hydrolysis variables on NR was described through response surface analysis (RSA). The results showed that pH and time were the most important parameters and that the buffer/substrate ratio had less of an effect on NR. The mathematical model presented an optimum hydrolysis conditions were as follows: temperature, 50.4 °C; pH, 7.8; buffer/substrate (containing 33.1% protein) ratio (w/w), 1.4:1; time, 15.4h; and enzyme concentration, 2.0g/kg. The predicted NR value was 98.99%, and the actual value obtained was 97.69%. Molecular mass of recovered hydrolysates ranged from >15 kDa to free amino acid (<1 kDa). The admixture of enzyme had specificity for terminal a variety of hydrophobic amino acids which resulted in recovery of non-bitter hydrolysates from porcine hemoglobin.

Keywords: [porcine hemoglobin](#), [enzymatic hydrolysis](#), [response surface methodology](#), [nitrogen recovery](#), [hydrolysates](#), [molecular mass distribution](#), [amino acid composition](#)

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