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# Study of Nano-Peptides or Peptide Combination Obtained From Soy Protein Hydrolysate with Anti-Inflammatory Activity in RAW 264.7 Macrophages

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## Extended Abstract

Inflammatory bowel diseases (IBD) represent a group of chronic systemic inflammatory conditions with predilection to gastrointestinal tract and include Crohns disease and ulcerative colitis. The incidence and prevalence of IBD increases steadily worldwide. There is an urgent need for effective and safe IBD therapies. Accelerated resolution of inflammation is a new strategy for the management of inflammatory diseases [1]. Against nitric oxide (NO) production in LPS-induced RAW 264.7 macrophages have been wildly applied to evaluate ingredients with anti-inflammatory activity [2,3]. Enzymatic hydrolysis coupled with membrane fractionation of soy protein might result in releasing and enhancing their biological activity and could be used as potential nutraceutical for the prevention of hypertension [4], increase of anti-adipogenic activity [5] and enhancement of lipolysis-stimulating activity [6]. Therefore, the purpose of this study is to screen and produce the enzymatic protein hydrolysates with potential anti-inflammatory activity and to enhance the activity using membrane reactor system. The possible anti-inflammatory mechanism for the selected protein hydrolysate or its fractions is also studied.

Based on our preliminary study, 4 type of protein were individually hydrolysed by Alcalase or Flavourzyme for 8 h to obtain hydrolysates. Among them isolated soy protein (ISP) and Alcalase were selected to produce the Alcalase-ISP hydrolysate (AISPH) with lowest IC50 of inhibitory NO production under pH 8.0 and 50°C. The lower IC50 represents the higher anti-inflammatory activity. In this study, AISPH will be further fractionated by ultra/nano-filtration membrane to investigate the effect of molecular weight cut-off (MWCO) membrane including 30 kDa-1 kDa MWCO membranes on anti-inflammatory activity. The fraction containing nano-peptides or peptide combination with highest anti-inflammatory activity will be selected and applied to investigate the mechanism of anti-inflammatory activity in LPS-induced RAW 264.7 macrophages.

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