

## Abstract

The aim of this research was to evaluate the isolated soy protein hydrolysates (ISPHs) with triglyceride-lowering action by using 3T3-L1 preadipocytes. ISPHs were produced by hydrolysis of isolated soy protein (ISP) with different enzymes, individually, at different hydrolysis time. Six different kinds of enzymes were applied including Flavourzyme , pepsin , chymotrypsin , trypsin , Neutrase and Esperase were chosen and applied in this study.

Among the ISPHs, Flavourzyme-ISP hydrolysates (FH) obtained at hydrolysis time of 4 h had the highest inhibition of cell growth in 3T3-L1 preadipocytes. The relative cell growth was significantly ( $p < 0.05$ ) reduced to 77.33%. Besides, FH obtained at hydrolysis time of 2 h (FH2h) showed the greatest inhibitory action of lipid accumulation during differentiation of 3T3-L1 preadipocytes. The relative lipid accumulation percentage (RLA, %) was decreased to 80.77% as compared with control. In fact, the lower RLA represents the higher inhibitory action of cell differentiation. Effects of different dosages of FH2h on

RLA during differentiation of 3T3-L1 preadipocytes were also conducted. As the dosages of FH2h reached 200 ppm, the RLA was significantly ( $p < 0.05$ ) reduced to 70.89%. Furthermore, among the ISPHs, FH2h also showed the highest inhibitory action of RLA in mature 3T3-L1 adipocytes. The FH2h was further fractionated by membranes with molecular weight cut-off (MWCO) ranged from 3-30 kDa. Both retentate of 8 kDa membrane and permeate of 3 kDa membrane had the better reduction of RLA in the adipocytes. By measuring the release of glycerides in the media, the above two fractions were proved to effectively stimulate the lipolysis of triglycerides as well as reduce the accumulation of triglycerides in the adipocytes.