



Free radical scavenging properties and DNA damage protecting of peptide hydrolysate derived from edible mushroom *Astraeus hygrometricus*

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Mushrooms have been used as food and for therapeutic purpose for decades, and various compounds derived from these have potential biological activities. The present study aims to explore the free radical scavenging properties of peptides derived from the edible mushroom *Astraeus hygrometricus*. In this research peptides from *A. hygrometricus* protein hydrolysates with microbial proteases (Alcalase[®], Flavourzyme[®] and Neutrase[®]) were prepared and their antioxidant activities were determined. Peptide fractions derived from *A. hygrometricus* hydrolyzed by 1% Alcalase[®], showed the highest DPPH and ABTS radical scavenging activities with IC₅₀ values of 13.40±0.48 and 5.53±0.59 µg/mL, respectively. Peptide fractions were fractionated using molecular weight cut-offs of 10, 5, 3 and 0.65 kDa membranes and their antioxidant properties further were analyzed. Among the fractions, MW < 0.65 kDa (F₅ fraction) exhibited high levels of free radical scavenging activities towards DPPH and ABTS with IC₅₀ values of 4.84±0.26 and 1.49±0.39 µg/mL, respectively. The F₅₁ fraction from Superdex[®] 75 column presented the highest scavenging activities on DPPH and ABTS radicals with IC₅₀ values of 32.47±1.16 and 15.58±0.73 µg/mL, respectively. Furthermore, the F₅₁ fraction could protect hydroxyl radical-induced DNA damage as shown in pKS, pUC19, and pBR322. Hence, F₅₁ fraction could be used as natural antioxidant for drug development.

Keywords: Free radical scavenging activities; DNA damage; Edible mushroom; *Astraeus hygrometricus*