# Determination of Antioxidant and Metal Chelation Activities of *Sepioteuthis lessoniana* (Squid) Ink Hydrolysates

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Big fin reef squid (*Sepioteuthis lessoniana*) is a widely distributed species in Northern coast of Sri Lanka and generates 52% of total body weight as waste due to high utilization in processing industry while causing a series of ecological problems and environmental pollution. As these by-products are a potential source of good bioactive compounds, this study aimed to analyze the bioactive properties of hydrolysates developed from squid crude ink. Ink sacs of *S. lessoniana* were collected and squeezed. Moisture, protein, ash and lipid content in crude ink were analyzed. Trypsin (1:100) was used in the preparation of enzymatic hydrolysates from lyophilized ink at pH of 7.8 by incubating at 37 °C for 0, 3, 6, 9, 12 and 24 hours followed by heat inactivation at 100 °C for 15 minutes. Best time course (3 hours) was detected using 15% SDS-PAGE and directed to develop chemical hydrolysates using 6 M NaOH (basic), 6 M HCl and 6 M Acetic acid (acidic) in 2:1 ratio respectively while incubating at 37 °C for 3 hours followed by heat inactivation at 100 °C for 15 minutes and 15% SDS-PAGE was conducted. DPPH radical scavenging assay was used to detect antioxidant activity while metal chelating activity was used to detect $Fe^{2+}$ chelating activity in selected best hydrolysates. According to the proximate analysis, moisture and protein contents were 75.53±2.10% and 19.73±2.44% respectively in crude ink. DPPH scavenging assay showed a significant difference between the treatments ($p<0.05$) and $Fe^{2+}$ chelating activity assay revealed that there was no significant difference among those three hydrolysates ($p>0.05$). However, highest DPPH scavenging activity and $Fe^{2+}$ chelating activity values (61.54±2.96% and 30.35±3.91%) were obtained from acid hydrolysis. Accordingly, the study concluded that hydrolysates produced by incubating with 6 M HCl and 6 M Acetic acid for 3 hours followed with heat inactivation has better antioxidant and metal chelating activities compared to rest.

*Keywords*: Squid ink, Enzymatic hydrolysates, Chemical hydrolysates, Antioxidant, Metal chelating