

**Comparison of Different Enzymatic Inactivation
Methods for Ovalbumin and the Functional Properties
of Peptides Derived**

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ABSTRACT

Ovalbumin is the predominant protein in egg white, which contributes more than 50% of the total egg white proteins. Peptides derived from ovalbumin showed many functional properties. However, no research has been carried out to check the effect on peptides derived from the inactivation methods used. The objectives of this study were to compare peptides derived from ovalbumin using heat and pH inactivation methods and to compare the functional properties of the peptides in the hydrolysates. Ovalbumin (20mg/ml) was hydrolyzed using protease from *Bacillus licheniformis* (>2.4 U/mg) and papain as 1:100 with different incubation time as 0, 3, 6, 9, 12, 24 hours for 37⁰C. As inactivation methods, heating for 100⁰C for 15 minutes (HT) and adjusting the pH to 10.0 (PT) were used. Peptides derived from two treatments were checked with 15% SDS-PAGE. Locally isolated *Salmonella* spp. and *Escherichiacoli* were used to check the antimicrobial activity of the peptides derived, with Augmentin^{XR} (0.001 ppm) and distilled water as a positive and a negative control, respectively. Iron and copper chelating activities were used to check for their metal chelating activities. The results indicated that all the HT and PT treatments had no antimicrobial effects on either of the microbes at any given time period. However, two enzyme treatments & two inactivation methods showed high iron chelating activity (50-80%) and no significance difference was observed ($p > 0.05$) between 0 to 24 hours incubation time. Significant difference was observed in copper chelating activity between PT and HT in protease. All treatments in PT in protease showed negative values, indicating the release of Cu²⁺. However, with HT treatment, 60% copper binding ability was observed in sample incubated for 03 hours, but the values decreased with the time. All treatments except papain HT, 03 & 12 hours treatments showed no antioxidant activity. The results indicated that the peptides derived from two inactivation methods were different. However, further studies are needed to confirm these results by analysing the peptides and their structure.

Keywords: Ovalbumin, Enzymes hydrolysates, Antimicrobial, Metal chelating