



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Partial Purification of Hen Egg White Lysozyme by Ethanol Precipitation Method and Determination of the Thermal Stability of Its Lyophilized Form

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Abstract: Lysozyme was partially purified from hen egg white by precipitation of non-lysozyme protein impurities during incubation in the presence of ethanol. The thermal stability of the obtained partially purified enzyme was also characterized. The incubation of diluted egg white for 2-8 h in the presence of 20% ethanol was not very effective for the partial purification of lysozyme by precipitation of major egg white proteins; however, 4- to 6-h or 6- to 8-h incubation of diluted egg white in the presence of 30% and 40% ethanol could be employed more effectively for partial purification of lysozyme. Without applying the incubation period, the highest specific activity was obtained by the treatment of egg white with 40% ethanol. Thus, ethanol at this concentration could be used for a continuous process of partial purification. For batch lysozyme purification, on the other hand, incubation in the presence of 30% ethanol was more appropriate. The activities and protein contents of dialyzed and lyophilized enzymes obtained by 6 h-incubation in the presence of 20%, 30%, and 40% ethanol precipitations were 1878, 6669, and 6115 U/mg powder, and 0.98, 0.90, and 0.93 mg protein per mg powder, respectively. The ranges of thermal inactivation parameters, such as D ($D_{80\text{ }^{\circ}\text{C}} = 29.2\text{-}59$ min, $D_{90\text{ }^{\circ}\text{C}} = 8.8\text{-}21$ min) and z ($z_{80\text{-}90\text{ }^{\circ}\text{C}} = 17.4\text{-}22.3$ °C) values of the enzyme, clearly indicated the moderate and variable heat stability of lyophilized lysozymes obtained from different batches of egg white.

Key Words: Lysozyme, hen egg white, partial purification, ethanol precipitation, thermal stability

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