

# Studies on Functional Properties of Protein Isolates Recovered from Swine Liver and Lung

邱弘義、涂瑞澤 ; 顏裕鴻

E-mail: 8407573@mail.dyu.edu.tw

## ABSTRACT

Lungs and livers were first grounded and homogenized, then treated by the following three methods: (1) without any further chemical treatment, (2) alkaline solubilization and acidic precipitates, and (3) SDS solubilization and FeCl<sub>3</sub> precipitation. The precipitations were dialyzed for one week and then freeze-dried. Chemical analysis showed that those isolates all contain abundant protein (more than 70%). Especially those obtained by the alkaline/acid treatment contain protein as high as 77%. The difference of protein contents among the three methods is not very substantial. From the economic point of view, the one without chemical treatment may be the best because of its lower cost. Attempts have been made to remove the lipid from the liver and lung isolates with organic solvents. Solvents used in this work include carbon tetrachloride, chloroform, dichloromethane, isopropanol, ethanol and methanol. A hyperbolic relationship was observed between the amount of lipid extracted and the dielectric constant of the solvent used. This relationship allows us to calculate the average intensity of interaction between protein and lipid in the isolates. Furthermore, the total amount of lipid present in each isolate can then be deduced. Several functional properties were studied and compared among liver and lung isolates, soy proteins and sodium caseinate. These properties include protein solubility (PS), water retention (WR), fat binding (FB), foaming (FA) and emulsion (ES) properties. Statistical experimental designs (mainly central composite designs) were used to perform the experiments. The results were then analyzed by the multiple factor ANOVA to identify the major effects to the properties under study. The property response surfaces, each as a function of major factors, were obtained for the liver and lung isolates, soy protein and sodium caseinate

Keywords : Liver ; Lung ; Protein Solubility ; Water Retention ; Fat Binding

## Table of Contents

0

## REFERENCES

0