The Effect of Extraction and Drying Method to Protein Content of the Albumin Concentrate from Channa striata

Maria Goretti Marianti Purwanto

Faculty of Biotechnology, University of Surabaya, Surabaya, Indonesia

maria_gmp@staff.ubaya.ac.id

Abstract

Snakehead fish (*Channa striata*) is a type of carnivore fish living in fresh water and belogs to family of Channidaea. Protein and albumin content in the snakehead fish as reported is considered as high and thus, can provide health function to help in the treatment of wound healing patients, children with malnutrition and some other medical cases. Protein, as biomolecule, is very sensitive to the external condition and thus, requires adequate treatment during extraction and dying processes in order to get a biologically active albumin concentrate. In this work we varied the extraction and drying methods (temperature, maceration time, and steps of extraction and drying processes) from sample of snakehead fish from Kalimantan. It was found that maceration temperature and drying methods gave significant effect to both yield and quality of albumin concentrate from the snakehead fish. Additionally we also analyzed one commercial snakehead fish albumin concentrate which was proven to have a significantly lower protein profile as well as poor solubility in aqueous solvents.

Key words: *albumin, snakehead fish, Channa striata*

Introduction

Albumin is a kind of globular protein dissolving in water, salt solvent and diluted acid (Winarno, 2004). Fish protein concentrate is one of product resulted from fishery processing of certain fish with high content of protein. Fish protein concentrate is sometimes abbreviated with FPC. Fish protein concentrate is one way in providing the fish for human consumption with protein as the special component. The albumin extraction of snakehead fish (*Channa striatus*) for producing the albumin protein concentrate is expected to be the alternative of cheaper albumin source for clinical use.

Figure 1. Channa Striata

Methods

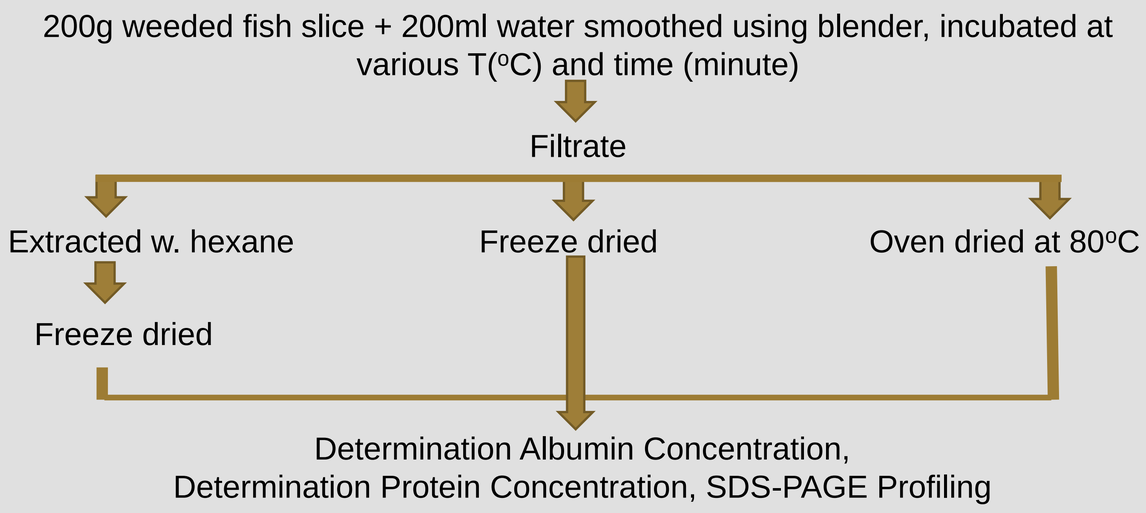

Table 1. Variation of Extraction and Drying Methods

Sample Code	Treatment
BR30'F	(Smoothed using) Blender, 25°C & 30 min. maceration, freeze-dried
B40°C30'HF	Blender, 40°C & 30 min. maceration, hexane, freeze-dried
B40°C30'HO	Blender, 40°C & 30 min. maceration, hexane, oven dried
B40°C30'F	Blender, 40°C & 30 min. maceration, freeze-dried
B40°C30'O	Blender, 40°C &30 min. maceration, oven dried
B40°C15'F	Blender, 40°C & 15 min. maceration, freeze-dried
B60°C30'F	Blender, 60°C & 30 min. maceration, freeze-dried
C40°C30'F	chopped, 40°C & 30 min. maceration, freeze-dried

Results

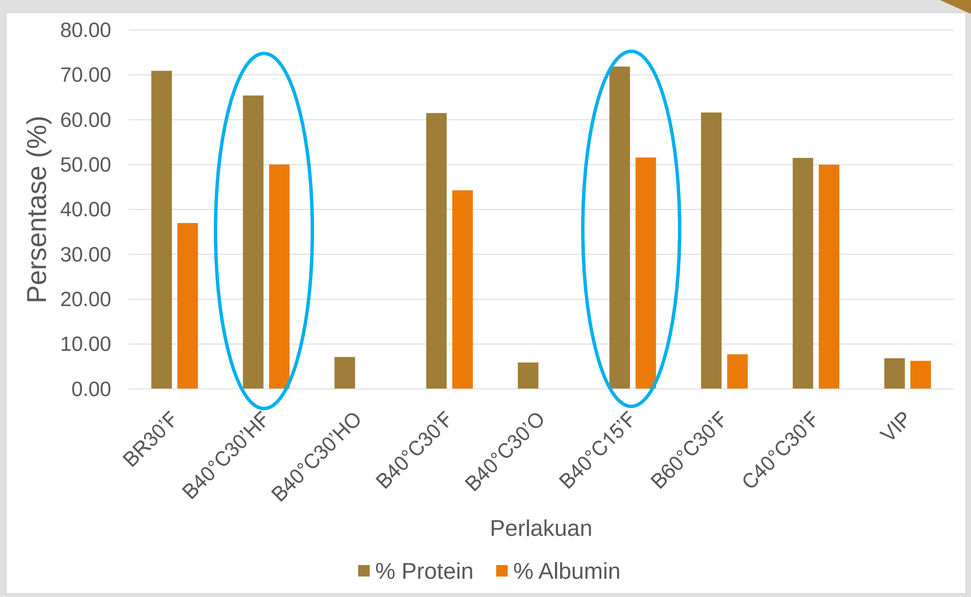

Figure 2. Albumin and Protein Concentration of Dried Concentrate of Channa striata, blue circle indicate two best condition giving highest protein as well as albumin yield

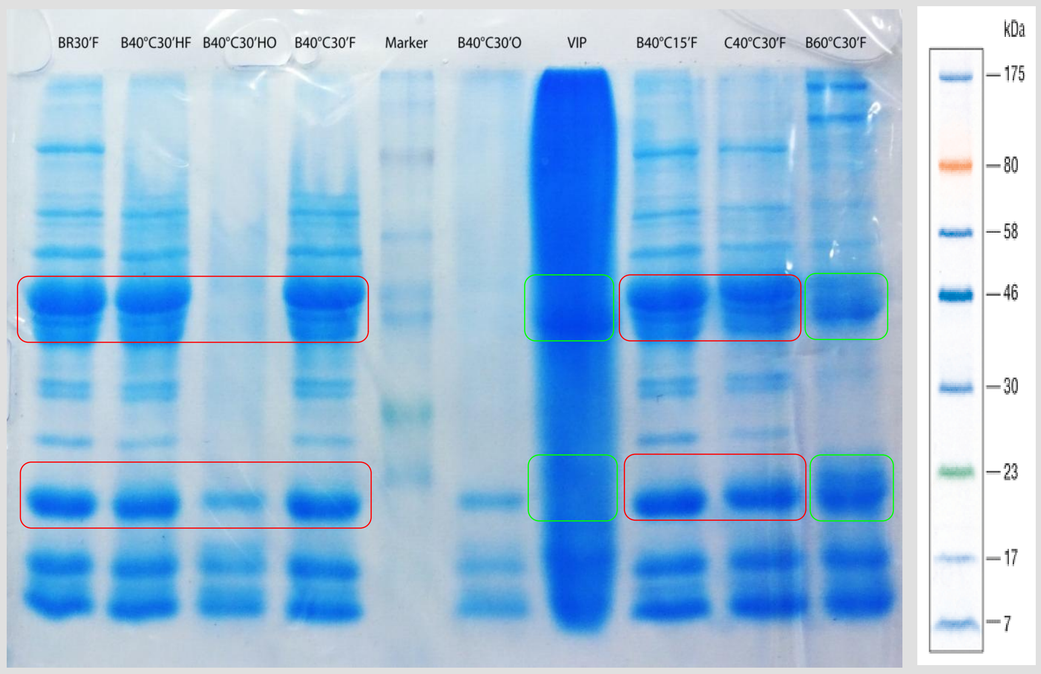

Figure 3. Protein Profille of Dried Albumin Concentrate, green marks indicated the changes in protein bands compared to the red marks, presumably caused by heat applied in the extraction and drying processes

Conclusions

Maceration temperature and drying methods gave significant effect to both yield and quality of albumin concentrate from the snakehead fish. One commercial snakehead fish albumin concentrate we analyzed was proven to have a significantly lower protein profile as well as poor solubility in aqueous solvents. We suggest the best condition to extract the albumin from the snakehead fish is by maceration at 40 °C for 15-30 min. Best drying method is freeze drying and drying using oven should be strongly avoided.

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