

Effects of anti-swelling agents on physicochemical properties of glucomannan from konjac corm (*Amorphophallus muelleri*)

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Abstract

Buk Nuea Sai, or *Amorphophallus muelleri*, is an indigenous crop found mostly in northern and western parts of Thailand. Fresh konjac corm of *A. muelleri* contains 75-80% moisture and 20-25% total solids. In the total solid portion, konjac corm consists of carbohydrates, particularly valuable glucomannan, insoluble starch, cellulose, and other impurities such as proteins and lipids. Konjac glucomannan is a useful hydrocolloid in many industries because of its ability of absorbing water. Extraction processes are needed to eliminate these impurities for producing purified konjac flour. Wet extraction method is widely used to improve quality of konjac flour because it can provide high percentage of extraction and good quality of konjac flour. However, glucomannan water absorbing properties become problematic during wet extraction by water because impurities are absorbed in glucomannan's molecules at the same time, therefore making it difficult to separate it out. This study attempts to use organic and inorganic compounds instead of water in wet extraction to improve glucomannan extraction. In this work, sodium tetraborate is compared with ethanol used in extraction process with regard to the effects on process characteristics and physicochemical properties of konjac flour such as extraction yield, the percentage of water uptake, whiteness index, glucomannan content and viscosity of glucomannan samples. The results show that using ethanol could provide higher extraction yield than sodium tetraborate. The whiteness index value, glucomannan content and viscosity of konjac samples extracted with sodium tetraborate were higher than those extracted with ethanol.