

Improving production of purified konjac glucomannan from *Amorphophallus muelleri* by multistage drying

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Abstract

Konjac glucomannan can be obtained from corms of various species within the *Amorphophallus* genus. The most popular species for use in food industry is BukNueaSai (*Amorphophallus muelleri*), a native species in Thailand as well as *Amorphophallus bulbifer*, a native species in Yunnan province, China, which are characterised by high glucomannan content, high viscosity of its glucomannan solution and stronger resistance to diseases than other species. Fresh konjac corm consists of carbohydrates, especially glucomannan, insoluble starch, cellulose, proteins, lipids and some impurities such as calcium oxalate which should be eliminated for safe consumption. Production of konjac glucomannan involves both dry and wet extraction processes. After this stage, the purified konjac glucomannan is dried down to safe moisture content for storage. However, improper handling of the drying process can significantly reduce the quality of konjac glucomannan. The aim of this research is to develop a multistage drying process for producing high quality purified konjac glucomannan flour as characterized by high whiteness index value, viscosity and low sulphur dioxide residue and shorter drying time. After wet extraction process, the purified konjac glucomannan was dried using hot air at various temperatures in the range of 50-90°C. As a result, a multistage drying process was developed following this concept. The results show that the multistage drying has significantly improved the whiteness index value but decreased the viscosity with the residual sulphur dioxide content of KGM flour and the drying time being reduced in comparison with the conventional hot air drying at constant drying temperature. A solution of KGM flour produced from fresh corms has higher viscosity than the solution of KGM flour from dried slices. However, the whiteness index of KGM flour shows no significant differences between treatments. In addition, the solution of KGM flour produced from *A. muelleri* has significantly higher viscosity than that of KGM flour produced from *A. bulbifer*. However, KGM flour from *A. bulbifer* has a very high whiteness index value.