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Lupin seed γ -conglutin: Extraction and purification methods- A review

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Abstract

Background

Lupin, the largest legume crop in Australia, is gaining global attention because of its unique protein γ -conglutin, which has shown promise as a nutraceutical for controlling blood glucose level and thus reducing the risk of type II diabetes development. Type II diabetes is a chronic condition affecting millions of individuals worldwide, which urgently requires natural side effect free therapies as alternatives to currently used drugs. Purification of γ -conglutin opens up a new avenue for high-value products from lupin seeds as nutraceuticals, the market for which is predicted to reach US\$ 250 billion by 2018 (Dutta, Mahabir, & Pathak, 2013).

Scope and approach

Previously, several research groups have reported trials on extracting and purifying proteins from lupin seed. However, most of these methods have focussed on protein isolates as food ingredients. Very few reports have aimed to purify γ -conglutin from the total proteins, but the methods reported are time-consuming and unsuitable for commercial scale production of high purity γ -conglutin due to the involvement of many processing steps for nutraceutical application. Hence there is a need to fully understand all reported γ -conglutin extraction and purification processes in terms of their advantages and limitations, so that an effective scalable purification process for nutraceutical grade γ -conglutin may be designed in the future.

Key findings and conclusions

This article reviews reported extraction and purification methods for γ -conglutin, to provide a basis for the development of novel purification technique/process for this potentially highly valuable protein.

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