

分离工程

纤维素酶对豆粕异黄酮提取的影响

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摘要 在常规的醇提工艺前用不同微生物来源的纤维素酶对豆粕进行预处理, 研究发现: 细菌纤维素酶能使异黄酮的提取率提高1.4倍, 产物以糖苷型异黄酮为主, 与直接醇提得到的产物组成相类似; 来自黑曲霉的纤维素酶对大豆异黄酮的提取率没有影响, 但能将糖苷型异黄酮转化为苷元型异黄酮; 里氏木霉纤维素酶能使醇提液中大豆异黄酮的提取率提高1.6倍, 并能把以糖苷型为主的异黄酮转化为具有更高生理活性的苷元型异黄酮。里氏木霉纤维素酶的最适用量为15 FPIU·(g豆粕)⁻¹, 酶作用时间为36 h。采用弱极性的大孔树脂精制苷元型异黄酮, 效果较好。

关键词 [豆粕](#) [纤维素酶](#) [糖苷型异黄酮](#) [苷元型异黄酮](#) [大孔树脂](#)

分类号

Effects of cellulase on extracting isoflavone from soybean residue

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Abstract

Soybean residue from soybean oil manufacturers can be used to extract isoflavone. Soybean residue was pre-hydrolyzed by cellulase from different microbes, then the hydrolyzate was obtained and the solid residue was extracted by using 70% ethanol. When using the cellulase from *Bacillus sp* ZU-4, the isoflavone yield was 1.4 times as that by normal ethanol extraction and the isoflavone composition was unchanged. When using the cellulase from *Aspergillus niger* ZU-7, the isoflavone yield was not increased but glucoside isoflavones were transformed to aglycones. By pre-hydrolysis with cellulase from *Trichoderma reesei* ZU-5, the isoflavone yield was increased by 1.6 times and at the same time the isoflavone composition was transformed to aglycones with higher physiological activity. The optimal dosage of cellulase from *Trichoderma reesei* ZU-5 was 15 FPIU(Filter Paper International Units)·(g soybean residue)⁻¹ and the treating time was 36 h. When selecting macroporous resin for isoflavones absorption and desorption, the macroporous resin with weak polarity was proper for purifying aglycone isoflavones.

Key words [soybean residue](#) [cellulase](#) [glucoside isoflavone](#) [aglycone isoflavone](#) [macroporous resin](#)

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