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Application of integrated membrane technology in purification of chlorogenic acid

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ABSTRACT

Integrated membrane technology is a membrane separation system, which can overcome the disadvantage of single membrane, save the cost, and improve the product quality. Chlorogenic acid, which is an effective component of Chinese medicine and a heat-sensitive substance, is not stable at high operation temperature. Chlorogenic acid with molecular weight of 354 Da and good solubility in water can be treated by nanofiltration (NF) membrane. In this work, polyetherimide (PEI) ultrafiltration (UF) membrane with good chemical and thermal stability is used in the purification of chlorogenic acid solution. Positively charged HACC/PEI NF membrane with good antibacterial performance and hydrophilicity is used to concentrate chlorogenic acid solution. It is found that, the PEI UF membrane can separate chlorogenic acid with other components and improve the purity of chlorogenic acid. At the same time, the rejection to chlorogenic acid of the positively charged NF membrane is about 92% which is suitable for the concentration of chlorogenic acid solution. The integrated membrane technology is very useful in the production of chlorogenic acid.

Keywords: Chlorogenic acid; Ultrafiltration membrane; Nanofiltration membrane; Integrated membrane technology; Chinese medicine

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