

Tongkat Ali extraction using hollow fiber membranes modified by negatively charged-modifying macromolecules

Abstract

Eurycoma longifolia Jack is an herbal medicinal plant popularly recognized as 'Tongkat Ali.' The plant parts have been traditionally used for its antimalarial, aphrodisiac, anti-diabetic, antimicrobial and antipyretic activities, which have also been proved scientifically. This study attempt to isolate and concentrate the targeted 4.3 kDa peptide fraction from the Tongkat Ali water extracts which consist of many other fractions of peptides, proteins and phytochemicals by membrane separation. The hollow fiber membranes made of Polyethersulfone (PES) were fabricated in-house using phase inversion technique with synthesized Charged-Surface Modifying Macromolecules (cSMM) which anticipated by the end-capped group of cSMM namely Hydroxybenzene carboxylate (HBC). The influence of stock feed concentration and system flow rate were investigated in this work. The results obtained showed that the permeate is 10 times concentrated than the actual overall extract with linear influence on protein permeate concentration with increasing feed concentration. Whereas the flow rate of the feed stream has contribute to the flow rate and the concentration of the permeate stream an increased protein concentration by 5 % with the doubled feed flow rate.