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# Analysis of flux decline using sequential fouling mechanisms during concentration of *S. cumini* (L.) leaf extract

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## Highlights

- Concentration of *S. cumini* (L.) leaf extract was carried out using nanofiltration.
- Sequential pore blocking models were used to explain the flux decline behavior.
- The 400 Da nanofiltration membrane was selected for concentration.
- Effects of operating conditions were observed on permeate flux and product purity.
- Six phenolic acids and four flavonoids were identified and quantified using HPLC.

## Abstract

Experimental studies were performed in a stirred cell for concentration of MF-pretreated extracts from jamun (*Syzygium cumini* L.) leaves using nanofiltration over a wide range of operating conditions. Performance of nanofiltration process was evaluated in terms of permeate flux, flux decline and extract quality (total polyphenol content, total flavonoid content and antioxidant activity). A total of ten phenolic compounds including six phenolic acids and four flavonoids were identified and quantified in jamun leaf extract using HPLC. A combined sequential model consisting of Hermia's complete pore blocking and cake layer formation based on resistance-in-series theory was considered to explain the flux decline behavior with time. The

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