

Effects of Extract Pretreatment Via Microfiltration on the Concentration of Coffee Extract Via Reverse Osmosis

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SUMMARY

When a Reverse Osmosis (RO) is applied to concentration of coffee extracts, a sharp decrease of flux of the permeate is observed. This results in taking too much time to concentrate the extract and obstructs application of RO to concentration of coffee extracts. Molecular weight distributions of feed and concentrated coffee extracts via RO were measured with Gel Permeation Chromatograph (GPC), and the analysis indicated that the decrease of the flux was attributed to an accumulation of large molecules on the RO membrane. Filtration of coffee extract through a Ceramic Microfilter (MF) having 0.8 μm pore size did not affect flavour characteristics of the coffee extract. This pretreatment reduced as much large molecules in coffee extract as accumulating on the RO membrane with non-treated extract. As a result, the pretreatment avoided the sharp decrease of the flux of permeate in RO concentration. The change of the flux was well described by a concentration polarisation model and this suggested little gel layer was formed on the RO membrane when the pretreatment was applied. The pretreatment of coffee extract via MF, thus, significantly improved the efficiency in the concentration of coffee extracts via RO.