

## The Effect of Ultrasound on Permeation Flux and Changes in Blocking Mechanisms during Dead-End Microfiltration of Carrot Juice

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**Abstract :** Carrot juice is one of the most nutritious foods that are consumed around the world. Large particles in carrot juice causing turbid appearance make some problems in the concentration process such as off-flavor due to the large particles burnt on the walls of evaporators. Microfiltration (MF) is a pressure driven membrane separation method that can clarify fruit juices without enzymatic treatment. Fouling is the main problem in the membrane process causing reduction of permeate flux. Ultrasound as a cleaning technique was applied at 20 kHz to reduce fouling in membrane clarification of carrot juice using dead-end MF system with polyvinylidene fluoride (PVDF) membrane. Results showed that application of ultrasound waves reduce diphasic characteristic of carrot juice and permeate flux increased. Evaluation of different membrane fouling mechanisms showed that application of ultrasound waves changed creation time of each fouling mechanism. Also, its behavior was changed with varying transmembrane pressure.

**Keywords :** Carrot juice, Dead end, Microfiltration, Ultrasound

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