

# The study of milk ultrafiltration performance as a function of membrane molecular weight cut off

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**Poster presentation**

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## **Abstract**

*The effect of membrane molecular weight cut off (MWCO) at three levels (10, 20 & 50 kD) on dynamic behaviour of permeate flux ( $J_p$ ), hydraulic resistances (total hydraulic resistance,  $R_T$ ; reversible fouling resistance,  $R_{rf}$ ; irreversible fouling resistance,  $R_{if}$  and membrane hydraulic resistance,  $R_m$ ) and milk solutes rejection (protein,  $R_P$ ; fat,  $R_F$ ; lactose,  $R_L$ ; minerals,  $R_M$  and total solids,  $R_{TS}$ ) have been studied. Experiments were carried out using the pilot plant UF membrane system equipped to a spiral wound module and a polysulfoneamide membrane. A three-stage strategy based on an resistance-in-series model (boundary layer-adsorption) was used to determine the different hydraulic resistances.*

*The results showed that the  $J_p$  decreases greatly with increasing process time, but the  $J_p$  values for 20 kD obtained considerably higher than 10 & 50 kD during whole process.  $R_T$  increased during operation at all levels of MWCO, but the hydraulic resistances values for 50 kD was significantly greater than 10 & 20 kD. The milk solutes rejection results also showed that the  $R_P$  and  $R_F$  were almost constant with process time at the corresponding MWCO, whereas the  $R_L$ ,  $R_M$  and  $R_{TS}$  significantly increased.*

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