SUPPLEMENTARY MATERIAL

Table 1: Description of equations used for performance analysis of selected models to predict permeate flux in ultrafiltration processes

Equation	Description	Nomenclature	Models tested with this equation	Reference
$\mu = 8{,}8E\text{-}4 + 1{,}2E\text{-}5\ Cb + 1{,}41E\text{-}7\ Cb^2 + 8{,}7E\text{-}10\ Cb^3$	Equation used for viscosity estimation	μ = Viscosity Cb = Bulk concentration	- Shear-Induced (Davis) - Dynamic (Song) - Kenden & Katchalsky - Wijmans *et al* - Hagen-Poiseuille - De & Bhattacharya - Ho & Zydney	[1]
$\frac{Cb}{Cbo} = \frac{Vo}{Vo\text{-}V}$	Equation used for estimations of feed concentration and permeate volume	Cb = Bulk concentration Cbo= Feed concentration V= Total permeate volume Vo= Initial volume	- Shear-Induced (Davis) - Dynamic (Song) - Hagen-Poiseuille - De & Bhattacharya	[2]
$D = \sum D_i Z_i$	Equation used for diffusivity estimation	D = Diffusivity D_i = Diffusivity of solid i Z_i = Weight fraction of suspended solid i i = Refers to each existing solid in the juice	- Shear-Induced (Davis) - Wijmans *et al* - De & Bhattacharya	[1]
$\rho = 999{,}7 + 5{,}1E\text{-}1\ Cbo + 2{,}1E\text{-}3\ Cbo^2$	Equation used for density estimation	ρ = Density Cbo= Feed concentration	- Shear-Induced (Davis) - Dynamic (Song) - Kenden & Katchalsky - Wijmans *et al* - Hagen-Poiseuille - De & Bhattacharya - Ho & Zydney - Mondal & De - Yee *et al*	[1]
$\varepsilon = N \frac{\pi}{4} d_p^2$	Equation used for porosity estimation	ε = Porosity N = Pore density dp = Pore diameter	- Wijmans *et al* - Hagen-Poiseuille - De & Bhattacharya	[3]
$J = \frac{\lvert\Delta P\rvert - \lvert\Delta\pi\rvert}{\mu R_m}$	Equation used to determine osmotic pressure (Δπ)	J = Flux of permeate ΔP = Transmembrane pressure μ = Viscosity R_m = Hydraulic resistance	- Kenden & Katchalsky - Wijmans *et al*	[4]

$Sh = \frac{k\,d}{D}$	Sherwood number used for estimation of the mass transfer coefficient	Sh = Sherwood number k = Mass transfer coefficient d = Diameter module D = Diffusivity	- Wijmans *et al* - De & Bhattacharya	[5]
$r_p = 180\frac{(1-\varepsilon)^2}{a_p^2\varepsilon 3}$	Carman-Kozeny' equation used to determine the specific resistance (r_p)	ε = Porosity of the concentration polarisation layer a_p= Average solute particle diameter	Wijmans *et al*	[6]
$R_p = r_p\ \delta_p$	Resistance of concentration polarisation layer (R_p)	r_p = Specific resistance δ_p = Thickness of concentration layer	- Wijmans *et al* - Ho & Zydney	[6]
$\delta_p = \frac{k}{D}$	Thickness of concentration layer (δ_p)	k = Mass transfer coefficient D = Diffusivity	- Wijmans *et al* - De & Bhattacharya	[3]
$\delta_* = \left(\frac{144\,D\,L\,C_b^*}{\left(3+\left(\frac{1}{n}\right)\right)U_o d^2 C_g^*}\right)^{1/3} x_*^{1/3}$	Equation used for estimation of the non-dimensional thickness of the concentration boundary layer (δ_*)	D = Effective diffusivity of the gel forming solutes L = Module lenght Cb* = Non-dimensional bulk concentration n = Flow behavior index Uo = Maximum fluid velocity (centerline velocity) d = Module diameter Cg* = Non-dimensional gel layer concentration X* = x/L (x=distance along x-axis)	De & Bhattacharya	[7]
$Sh = 1{,}145\left(3+\frac{1}{n}\right)^{1/3}\left(Re{*}Sc{*}\frac{d}{L}\right)^{1/3}\left(e^{(-2/3)\alpha C_0\left(C_g^*-C_b^*\right)}\right)^{0.1}$	Sherwood number – Hollow fiber configuration	Re= Reynolds number Sc = Schmidt number Cb* = Non-dimensional bulk concentration Cg* = Non-dimensional gel layer concentration L = Module lenght d = Module diameter n = Flow behavior index	De & Bhattacharya	[7]
$Sh = 1{,}816\left(Re{*}Sc{*}\frac{d}{L}\right)^{1/3}\left(e^{(-2/3)\alpha C_0\left(C_g^*-C_b^*\right)}\right)^{0.14}\left(\frac{C_g^*}{C_b^*}\right)^{1/3}$	Sherwood number – Tubular configuration	Re= Reynolds number Sc = Schmidt number Cb* = Non-dimensional bulk concentration	De & Bhattacharya	[8]

		Cg* = Non-dimensional gel layer concentration L = Module lenght d = Module diameter n = Flow behavior index		
$Rg = \beta(1-\varepsilon_g)\rho_g H$	Gel layer resistance (Rg)	ρ_g = Gel layer density H = Gel layer height ε_g= Gel layer porosity β = Specific gel resistance	De & Bhattacharya	[7]
$R^*_{CPB} = \exp(k_1 t) - 1$	Equation used for estimation of the non-dimensional complete pore blocking resistance (R^*_{CPB})	k_1= Complete pore blocking constant t = Time	Mondal & De	[9]
$R^*_c = \frac{R_p}{R_m}$	Equation used for estimation of the non-dimensional cake resistance (R^*_c)	Rp = Resistance of concentration polarisation layer Rm= Hydraulic resistance of membrane	Mondal & De	[9]

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