

## Valorization of tomato peel waste carotenoids in different oil matrices

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### ABSTRACT/RESUME

*Abstract : The aim of this study is to enrich different oil matrices with carotenoids and lycopene from tomato peel waste.*

*The present study tested two hypotheses: 1) fatty acid chain length and degree of unsaturation affect diffusivity of lycopene and  $\beta$ -carotene in fat matrix; and 2) diffusivity of carotenoids in fat changes with the quantity of carotenoids extracted.*

*To evaluate the effect of fatty acid profile on carotenoid diffusivity, dried tomato peel (DTP) was extracted in ten different mixtures of sunflower oil (SO), goat's butter (GB) and palm stearin (PS). Proportions of each fat type in the mixture was calculated using a mathematical model. Three concentrations of DTP were tested, 2.22, 4.44 and 6.66%.*

*Dry tomato peel used in this study was rich in carotenoids, lycopene especially (188.2 mg/100 mL). Our results confirm that fatty acid profile of the fat matrix affects diffusivity of carotenoids. We concluded that at lower concentrations of DTP, lycopene has higher diffusivity with short chain fatty acid, while with higher concentrations of DTP, diffusivity of lycopene is favored with longer chain fatty acids. Diffusivity of  $\beta$ -carotene is not associated directly with the fatty acid chain length. Its pattern might be due to other factors of competition and molecular structure.*

*There was no evidence that the unsaturation degree of fatty acids affects carotenoid's diffusivity in fat.*

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