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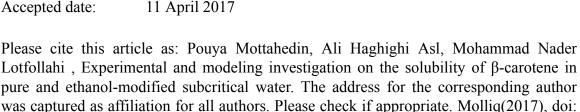
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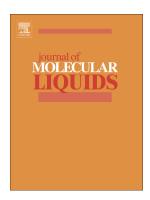
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Experimental and modeling investigation on the solubility of

β-carotene in pure and ethanol-modified subcritical water

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Abstract

The solubility of β-carotene in pure and ethanol-modified subcritical water was measured for

the first time. Response surface methodology (BBD) was used to evaluate the experimental

conditions. The independent variables were temperature (70-130) °C, subcritical water flow

rate (0.2-0.64) mL/min and (0-10) % (v/v) of ethanol as co-solvent. Samples were analyzed

by HPLC. The solubility of β-carotene was found as 272.341 ppm in the optimum

experimental conditions. Additionally, CPA EOS was used for describing the solubility of β-

carotene in subcritical water and in ethanol. The binary regressed parameters were applied to

predict the solubility of β -carotene in (ethanol + water) solution.

Keywords:

Solubility, β-carotene, subcritical water, RSM, CPA

1

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