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Abstract: The modelling of the experimental data of the extraction of the volatile oil from six aromatic plants (coriander, fennel, savoury, winter savoury, cotton lavender and thyme) was performed using five mathematical models, based on differential mass balances. In all cases the extraction was internal diffusion controlled and the internal mass transfer coefficient $k(s)$ have been found to change with pressure, temperature and particle size. For fennel, savoury and cotton lavender, the external mass transfer and the equilibrium phase also influenced the second extraction period, since $k(s)$ changed with the tested flow rates. In general, the axial dispersion coefficient could be neglected for the conditions studied, since Peclet numbers were high. On the other hand, the solute-matrix interaction had to be considered in order to ensure a satisfactory description of the experimental data. (C) 2010 Elsevier Ltd. All rights reserved.

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