

## Experimental measurement of solubilities of Montelukast in supercritical carbon dioxide

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### Abstract

In this research, the solubility of Montelukast was measured for the first time. Experiments was fulfilled at various pressures (12–30 MPa) and temperatures (308–338 K). It was found that the solubility of Montelukast is within the range of  $0.4 \times 10^{-4}$  to  $6.12 \times 10^{-5}$ . For correlating the solubility data of the drug, two sets of methods including, equations of states (EoS), namely Peng-Robinson (PR) with vdW2, and four semi-empirical density-based models were selected. According to the results, PR EoS could better for estimate the actual values of the SC-CO<sub>2</sub> solubility of Montelukast at 308 and 338 K. Also, by comparing the obtained results, it could be concluded Sodeifian et al. and Chrastil models produced the best correlation with AARD 9.14% and 9.28%.

**Keywords:** Montelukast, SC-CO<sub>2</sub>, Empirical Model, Solubility, EoS