Prediction of deferiprone solubility in aqueous mixtures of ethylene glycol, propylene glycol and polyethylene glycol 400 at various temperatures

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Abstract: Solubility of drugs is essential information and no data is available for deferiprone (DFP) in the literature. The solubility of DFP in water, ethylene glycol (EG), propylene glycol (PG) and polyethylene glycol 400 (PEG 400) at 293.2, 298.2, 303.2, 308.2 and 313.2 K is reported and mathematically represented by van’t Hoff equation. The solubility of DFP in aqueous binary mixtures of EG, PG and PEG 400 at 298.2 K is determined using the shake flask method and the generated data is used to train the Jouyban-Acree model. The trained versions of the van’t Hoff and Jouyban-Acree models are combined to provide predictive models for solubility of DFP in the investigated solvent systems. The mean percentage deviations of the back-calculated solubilities against the corresponding experimental values were 1.3 and 1.1 %, respectively for the mono- and mixed solvent systems.

Keyword: Deferiprone, Solubility, Prediction, Jouyban-Acree model, van’t Hoff equation, cosolvency, mixed solvent