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Ayurvedic medicinal oils : octanol - water partition coefficients of some compounds found in 'Pinda' oil

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The octanol – water partition coefficient of a neutral substance (P), which is often expressed as its logarithmic value (log P), is an important physico-chemical descriptor of lipophilicity. The traditional preparation of the Ayurvedic medicinal oil – 'Pinda' oil which is a topical medication, involves extraction of compounds from plant ingredients into hot water followed by partitioning into oil phase with continuous concentration of the aqueous phase by evaporation.

Major constituents of 'Pinda' oil which are mainly anthraquinones were isolated and identified. Measurement of log P values of these constituents was done by the Reverse Phase HPLC as described in Product Properties Test Guidelines, OPPTS 830.7570 of the United States Environmental Protection Agency to investigate, whether there was any correlation between log P and rates of incorporation of compounds into the medicinal oil. The log P value of a compound is also an important parameter in determining transdermal penetration.

Results show that the substances present in 'Pinda' oil fall into a wide range of log P values spanning from 0.3 to 4.8. As expected, some high polar compounds with log P >2 are incorporated into the oil by the traditional preparative process. However, it was noted that some compounds present in plant material whose log P values fall within this range were not incorporated in the oil. It contains a number of compounds with log P >2 which is one of the requirements for a substance to be capable of transdermal absorption.

Keywords: Ayurveda, medicinal oil, Pinda, partition coefficient, anthraquinone

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