Abstract:

2-Nitrobenzanthron (2-NBA) and 3-nitrobenzanthron (3-NBA) are pollutants widely occurring in the environment. The main sources of benzanthrones are combustion products (i.e. diesel exhausts, wood and cigarette smoke ...). 3-NBA is proven strong mutagen and carcinogen for bacteria and mammals and it is probably mutagenic also to humans, while 2-NBA shows genotoxic properties lower by 3-4 orders of magnitude. Here we consider the possibility that large difference in the solubility, and consequently also the difference in bioavailability of these isomers could be the factor partially explaining this phenomenon.

One goal was to determine solubility of 2-NBA in water and compare it with 3-NBA and also with other carcinogens studied in our laboratory (Sudan I, ellipticin). Another objective was to evaluate the effect of model proteins (bovine serum albumin, lysozyme) on solubility of Sudan I and ellipticine. The last aim was to determine extinction coefficients of these compounds in water and in methanol.

Two different methods were employed to determine the solubility of the model compounds. The first method was based on spectrophotometric verification of the Lambert-Beer law. The results were than compared with other method measuring concentration of a compound in saturated solution

(In Czech)

Key words: solubility, UV-VIS spectroscopy, 3-nitrobenzanthrone, 2-nitrobenzanthrone, ellipticine, Sudan I, albumin, lysozyme