

CAFFEINE AND PENTOXYFFILLINE INHIBITED ACTION OF SOME CHEMICAL MUTAGENS

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Caffeine and pentoxifylline are methylxantines, which are compounds present in drugs (including anti-cancer drugs), as well as in popular drinks like tea, coffee or coke. There are data suggesting that methylxantines have a protective influence against mutagens – namely that the presence of these chemicals in the cell can prevent DNA damage caused by mutagenic agents. One of the possibilities to explain the mechanism of methylxantine action as anti-mutagenic agents is that they form aggregates with chemical mutagens that have an aromatic ring. Assuming that this hypothesis is correct, such activity would decrease the levels of free mutagens in the cell. Using spectrophotometric methods and the statistic-thermodynamic model of mixed aggregation, we calculated the association constants (K_{AC}) for complexes of ICR 191 (a derivative of acridine) with caffeine and pentoxifylline. The results of our experiments indicated that the preventive influence of methylxantines is probably a result of the formation of π - π stacking complexes between methylxantines and aromatic mutagens. Preliminary data employing the *Vibrio harveyi* assay for mutagen detection confirmed the results of the *in vitro* experiments.