

XENOBIOTICS IN FOOD I. METABOLIC PHTHALATE DEGRADATION

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SUMMARY

In conjunction with the programme of monitoring the food contamination by one of the most widely distributed contaminants - phthalic acid esters - the present investigation was focused on the elucidation of metabolic transformations of phthalates in the organism of the rat and humans and on assessment of the phthalate content of beef and pork liver. As a model substance di-(2-ethylhexyl)phthalate was selected.

The paper contains new information on the mechanism of metabolic oxidative phthalate degradation in the rat, identifies the structure of intermediary products and suggests a reaction breakdown pattern. The balance of phthalate excretion from experimental animals in faeces and urine was examined, their metabolized ratio was defined and the phthalate load of the decisive parts of the organism was evaluated, i.e. in the liver, kidneys, spleen, brain and muscular tissue.

Subsequent monitoring of phthalates in urine of human volunteers exposed only to the natural phthalate intake from contaminated food revealed the presence of some oxidative metabolites in body fluids. It provided also evidence of the possible endogenous formation of 2-ethyl-3-carboxypropylphthalic acid the presence of which may signalize metabolic oxidation by a pathway terminated by possible hepatocellular carcinogenicity of phthalates. The probability of introduction of oxidative phthalate metabolites from meat of domestic animals seems minimal.

Key words: phthalates, di-2-(ethylhexyl)phthalate, metabolism of phthalates

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