

## DISSERTATIONES

DCC-13 (Univ. Zagreb)

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*Croat. Chem. Acta* 35 (1963)**Isolation and Identification of Radioactive Metabolites of Labelled 5-Hydroxytryptamine (Serotonin)**

S. Iskrić

*Tracer Laboratory, Institute »Ruđer Bošković«, Zagreb, Croatia, Yugoslavia*

After administration of 5-hydroxy( $1\text{-}^{14}\text{C}$ ) tryptamine creatinine complex (serotonin) to rats (dose level 6 mg./rat), besides 5-hydroxyindolylacetic acid, six other radioactive metabolites were found in 24 hrs. urine.

To obtain sufficient amounts of the unknown metabolites, urine was treated with deactivated charcoal, and the partially purified urine concentrates were submitted to successive cellulose column- and paper-chromatography.

The radiochemically and chemically pure metabolites were identified by microchemical and biochemical methods. In addition, urine of rats given the corresponding precursors of metabolites and their conjugating agents, resp., as well as inhibitors of enzymes, was also investigated.

In this way 5-hydroxytryptamine-*O*-glucuronide, 5-hydroxytryptophol-*O*-glucuronide and 5-hydroxyindolylacetic acid-*O*-sulphate were identified as serotonin metabolites, while for the other three radioactive metabolites a tentative identification was offered. *N*-Acetylserotonin was established not to be a serotonin metabolite.

The results obtained have shown that besides the main route of serotonin metabolism, i.e. 5-hydroxytryptamine  $\rightarrow$  5-hydroxyindolylacetic acid, there also exist other minor pathways. One is the conjugation of the hydroxyl group with the glucuronic and sulphuric acid, resp., the first being predominant in serotonin metabolism. The identification of 5-hydroxytryptophol-*O*-glucuronide shows a second, so far unknown route of serotonin metabolism: the formation of 5-hydroxytryptophol.

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*Examiners:* Professor K. Balenović, Dr D. Keglević, Professor M. Proštenik.

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S. ISKRIC

DCC-13 (Univ. Zagreb)

1. Isolation and Identification of  
Radioactive Metabolites of La-  
belled 5-Hydroxytryptamine  
(Serotonin)

I. Iskrić S.

II. Tracer Laboratory, Institute  
»Ruđer Bošković«, Zagreb,  
Croatia, Yugoslavia

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Chromatography

— , of indolic compounds

— , on cellulose column

— , on paper

Indoles, <sup>14</sup>C-labelled

Indole, 3-(2-aminoethyl)-5-ol

— , — -5-O-glucuronide

— , 3-(2-hydroxyethyl)-

-5-O-glucuronide

— , 3-(2-carboxyethyl)-5-ol

— , — -5-O-sulphate

Serotonin metabolites