The changes occurring in phospholipid levels in the different tissues of scorbutic guinea-pigs are not uniform (KAWISHWAR et al.[6]); concentration of lipoid phosphorus increases in the blood serum (BANERJEE and BANDYOPADHYAY[7]). Our findings are in agreement with these results. In view of the central role played by the liver in phospholipid metabolism, a most interesting finding is the marked accumulation of phospholipids in the liver of scorbutic guinea-pigs. Simultaneously with the increase of phospholipid concentration, an increased incorporation of the phosphate P^{32} into the fraction of lipoid phosphorus also takes place. This signifies that, in conditions of fully developed C-avitaminosis, an increased hepatal synthesis of phospholipids occurs. However, the mechanism of this phenomenon remains undetected, and it is not excluded that the accumulation of liver phospholipids depends also on an increased deposition of phospholipids in the liver to the detriment of other organs.

Zusammenfassung. Akuter Vitamin C-Mangel verursacht bei Meerschweinchen vorübergehenden Anstieg des Phospholipidspiegels im Blutserum, erhöhte Inkorporation des P^{32}-Phosphates in die Leberphospholipide und eine markante Akkumulation von Leberphospholipiden.

E. GINTER, J. ČERVEŇ, and M. GERBELOVÁ

Institute of Human Nutrition Research, Bratislava (Czechoslovakia), February 2, 1965

[6] W. K. KAWISHWAR, B. CHAKRAPANI, and S. BANERJEE, Indian J. med. Res. *51*, 488 (1963).

[7] S. BANERJEE and A. BANDYOPADHYAY, Proc. Soc. exp. Biol. Med. *112*, 372 (1963).

5-Methoxy- and 5-Hydroxy-Indolealkylamines in the Skin of *Bufo alvarius*[1]

Amongst the 40 *Bufo* species so far examined in this laboratory for their skin content of biogenic amines, the North American *Bufo alvarius* Girard occupies a unique position. The skin of this desert toad contains, in addition to the usual 5-hydroxyindolealkylamines and to several unknown indoles, enormous amounts of 5-methoxyindole derivatives represented mainly by 5-methoxy-N,N-dimethyltryptamine (*O*-methylbufotenine) and, subordinately, by 5-methoxy-N-methyltryptamine and 5-methoxyindolacetic acid (5-MIAA).

The dry skins of 12 specimens of *Bufo alvarius* were extracted twice with 70% acetone, always keeping distinct the glands and the remaining skin. A minor part of the 24 extracts was put aside for individual estimations, the bulk was pooled to constitute a glandular and a non-glandular skin extract, respectively. Amounts of these extracts corresponding to 20 g of non-glandular skin, or 5 g of glands, were evaporated to dryness and the residues taken up in 98% ethanol, which was then passed through an alkaline alumina column. Elution was carried out, as usual, with descending concentrations of ethanol, and the different eluates submitted to paper chromatography, thin layer chromatography and bioassay[2]. It was found that cutaneous glands contained 0.8 to 5 mg bufotenine and as much as 60 to 160 mg *O*-methylbufotenine per g dry tissue. For non-glandular skin, values of known compounds were as follows: 0.33–2.15 mg bufotenine, 1.0–3.5 mg *O*-methylbufotenine, 0.020–0.023 mg 5-methoxy-N-methyltryptamine, 0.04 mg 5-MIAA, 0.004–0.006 mg 5-HT, 0.03–0.04 mg N-methyl-5-HT, and 0.011–0.012 mg/g 5-HIAA. *O*-methylbufotenine could easily be obtained in crystalline form, as picrate, from the 98% ethanol eluate of the alumina column loaded with the glandular extract. This picrate was indistinguishable from the corresponding synthetic compound. The base prepared from the natural picrate and the synthetic *O*-methylbufotenine base, in their turn, showed the same chromatographic behaviour, the same ultraviolet and infrared spectra and the same peak in gas chromatography (HOLMSTEDT et al.[3]), and on treatment with hydrogen peroxide gave the same *N*-oxide.

So far, 5-methoxyindoles have been found only in some South American vegetables[3-6] and, in animals, only in the pineal gland of mammals and birds[7,8]. According to AXELROD and WEISSBACH[9], 5-hydroxyindole-*O*-methyltransferase, the enzyme responsible for *O*-methylation of 5-hydroxyindoles, is strictly localized in the pineal body. Present results show that amphibian skin also may possess 5-hydroxyindole-*O*-methyltransferase activity.

Details will be published elsewhere.

Riassunto. Gli estratti di pelle di *Bufo alvarius*, rospo delle regioni desertiche del Nord America, contengono, oltre alle consuete 5-idrossiindolalchilamine (5-HT, N-metil-5-HT, bufotenina) enormi quantitativi di derivati 5-metossiindolici, rappresentati soprattutto da *O*-metilbufotenina. Questa può giungere a costituire fino il 16% del peso delle ghiandole cutanee secche. Si insiste sulla probabile presenza di 5-idrossiindolo-*O*-metiltransferasi nella pelle di *Bufo alvarius*.

V. ERSPAMER, T. VITALI, M. ROSEGHINI, and J. M. CEI

Istituti di Farmacologia e di Chimica Farmaceutica, Università di Parma (Italia), and Instituto de Biologia, Universidad Nacional de Cuyo, Mendoza (Argentina), April 30, 1965.

[1] Supported by a grant from the Consiglio Nazionale delle Ricerche, Roma.

[2] Standard 5-methoxyindoles used for comparison were in part obtained from the Farmitalia Research Laboratories, Milan; in part synthesized by one of us (V.). A sample of natural *O*-methylbufotenine was kindly supplied by Dr. TSCHESCHE, Bonn.

[3] B. HOLMSTEDT, V. J. A. VANDENHEUVEL, W. L. GARDINER, and E. C. HORNING, Analyt. Biochem. *8*, 151 (1964).

[4] S. WILKINSON, J. chem. Soc. *2*, 2079 (1958).

[5] I. PACHTER, D. E. ZACHARIUS, and O. RIBEIRO, J. org. Chem. *24*, 1285 (1959).

[6] G. LEGLER and R. TSCHESCHE, Naturwissenschaften *50*, 94 (1963).

[7] A. B. LERNER and Y. TAKAHASHI, J. biol. Chem. *235*, 1992 (1960).

[8] J. AXELROD, R. J. WURTMAN, and CH. M. WINGET, Nature *201*, 1134 (1964).

[9] J. AXELROD and H. WEISSBACH, Science *131*, 1312 (1960); J. biol. Chem. *236*, 211 (1961).