Removal of ^{60}Co and ^{65}Zn from the Mammalian Body

The mobilization of both radionuclides by the Ca-chelate of diethylenetriaminepentaacetic acid (DTPA) is a well-established fact[1–3]. The actual fraction of the body burden which can be removed, however, is relatively small. This is due to the fact that the coordination compounds formed by Zn and Co with endogenous ligands are rather stable and/or inert[4,5]. The present study aims at the elucidation of the question whether a higher efficacy can be achieved with the Co- and Zn-chelates, respectively, i.e. by isotopic exchange.

Adult rats of the Heiligenberg strain were injected intravenously with carrier-free $^{60}CoCl_2$ or $^{65}ZnCl_2$. The body burden following the intraperitoneal administration of Ca-, Zn- and Co(II)-DTPA[6], respectively, was determined and expressed as % of the radioactivity in control animals. Obviously, as can be seen from the Table, the principle of isotopic exchange is more effective than chelation.

Radioactivity of the whole body 48 h after the administration of the chelates. Averages of 5 (^{60}Co) and 6 (^{65}Zn) animals per group

Treatment	% of control (95% confidence limits)
200 μM Na_3Ca-DTPA 6 h after ^{60}Co	90 (70–107)
200 μM Na_3Co-DTPA 6 h after ^{60}Co	60 (50– 71)
512 μM Na_3Ca-DTPA 168 h after ^{65}Zn	91 (88– 94)
512 μM Na_3Zn-DTPA 168 h after ^{65}Zn	80 (77– 83)

At this juncture, it may be mentioned that the apparent retention of ^{65}Zn observed after administration of Zn-DTPA labelled with ^{65}Zn[7–9] is due not only to an instability of Zn-DTPA in the physiological milieu and a corresponding *genuine* Zn-retention. In view of the above mentioned findings, it is most likely that the isotopic exchange also in this case plays a significant role.

Zusammenfassung. Trägerfreies ^{60}Co(II) und ^{65}Zn wurden Ratten intravenös injiziert. Bei nachträglicher intraperitonealer Applikation der entsprechenden nichtradioaktiven und durch DTPA chelierten Isotope werden erheblich grössere Radionuclidmengen aus dem Körper ausgeschieden als nach Verabfolgung von Ca-DTPA. Isotopischer Austausch ist somit wirksamer als Chelierung.

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Urinary Excretion of 5-Hydroxyindole Acetic Acid by Smokers and Non-Smokers

It has been reported by SCHIEVELBEIN et al.[1] that liberation of serotonin from experimental animals and isolated organs can be produced by nicotine. These findings led the same investigators (SCHIEVELBEIN et al.[2]) to study the urinary excretion of 5-hydroxyindole acetic acid (5-HIAA), the principal urinary metabolite of serotonin, by human smokers and non-smokers. They reported a considerable increase in the urinary excretion by smokers in comparison to non-smokers as well as by non-smokers after smoking several cigarettes. As a consequence they suggest that in studies on serotonin metabolism it is essential to pay attention to smoking habits of the persons to be studied.

The results published were, however, based on very few observations with considerable individual variations, and consequently do not seem too convincing especially as far as the habitual smokers are concerned. Because of this a larger field survey study was undertaken to find some additional data. This problem seemed worth studying since a positive correlation between smoking and changes in tryptophan metabolism could possibly be related to the higher incidence of malignancies in smokers through the fact that numerous internal carcinogenic substances could be produced in the organism as a consequence of changes in tryptophan metabolism (LEPPÄNEN and OKA[3]). After the material for this work was collected, DEGKWITZ[4] reported that in his studies no differences in the excretion of 5-HIAA by smokers and non-smokers was found and consequently he could not confirm the results of the authors mentioned.

The present material was collected from male heavy workers in a shipyard and metal industry, Pansion Telakka, Turku. All the workers (25 to 65 years of age) were given, after a normal working day in the middle of the week, two 50 ml bottles and a paper with instructions. They were asked to eat their normal daily food without any selection and to spend a normal life in every respect. On waking up next morning (6–6.30 a.m.) they were

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