ONLINE ISSN : 1880-1404
PRINT ISSN : 0916-717X

Biomedical Research on Trace Elements
Vol. 15 (2004) , No. 3 284-285

[Image PDF (328K)] [References]

Effects to amount of metallothionein and mRNA in testis by cadmium injection and oral administration to male rats

Yasuhiro Nakamura[1)], Youhei Ohkawa[1)], Yuki Maejima[1)], Taeko Nakagawa[1)] and Hisayoshi Ohta[1)2)]

1) Department of Occupational Health and Toxicology, Graduate School of Medical Sciences, Kitasato University
2) School of Allied Health Sciences, Kitasato University

(Accepted: September 13, 2004)

Abstract:
Male Wistar rats were given cadmium by intraperitoneal (ip) injection (1mgCd/kg). Other male Wistar rats were given Cd by oral administration at a dose of 0, 1, 2, and 5 mgCd/kg/day. All rats were slaughtered at 24 hours after Cd injection, and the testis was extracted immediately. Animals of the control group were given distilled water. Metallothionein (MT) concentration in testis was measured by the Cd-Hem method and capillary electrophoresis. Total RNA in testis was extracted, and gene expression of iso-MT (MT I, II, and III) was checked by RT-PCR.
The increased MT concentration in the oral Cd administration group was found depending on the amount of Cd intake whereas the decreased MT level was found in the Cd ip injection group. Increased gene expression of MT I and III was found depending on the increase of Cd exposure dose in both groups of the Cd injection and the oral administration of Cd. However, the decreasing tendency of MT-II was found in the Cd injection (ip) group, whereas the tendency of increase or decrease depended on Cd ingestion were not found in the oral Cd administration group. In the testis, it was considered that Cd toxicity was mitigated by MT induced by oral administration of Cd. On the other hand, as the decreased protein amount of MT was found, it was thought that the proteolysis or the translation function of MT gene in the testis was disordered by the acute Cd toxicity. Moreover, the possibility of the MT-III induction according to the increased Cd accumulation in testis by oral Cd administration was suggested from the result of mRNA

expression by RT-PCR.

Key words: Cadmium intake, Metallothionein, Cadmium toxicity, Testicular damage, Gene expression

To cite this article:

Yasuhiro Nakamura, Youhei Ohkawa, Yuki Maejima, Taeko Nakagawa and Hisayoshi Ohta, “Effects to amount of metallothionein and mRNA in testis by cadmium injection and oral administration to male rats”, Biomedical Research on Trace Elements, Vol. **15**, pp.284-285 (2004) .

JOI JST.JSTAGE/brte/15.284