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STUDY OF GLYCOGEN IN THE SKELETAL MUSCLES AND LIVER OF COBALT AND MANGANESE EXPOSED RATS

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Glycogen was determined in the skeletal muscles and liver of albino rats exposed to cobalt and manganese and their mixture. Treatment with these metals depleted glycogen in liver and skeletal muscles but it was revived with the treatment of the combination of cobalt and manganese. The expected causes and significance of the changes involved in both the tissues are discussed.

INTRODUCTION

Nutritional muscular dystrophy, a degenerative disease of skeletal muscles ,has been reported in a wide range of animal species. Trace elements amongst several other factors, are also known to affect the structure and function of muscles. Excess of manganese was reported to cause muscular degeneration (Babskij and Donskih , 1972). Cadmium and zinc have also been reported to alter muscular function(Brain *et al*. 1978). Since metals are known to disturb carbohydrate metabolism and their involvement with glycogen can also be appraised (Dinu and Pogbiani, 1973). Anyhow several metal salts deplete hepatic glycogen. Disruption of carbohydrate metabolism during acute or chronic liver injury is primarily associated with glycogen disorder. Many hepatotoxins are also known to affect glycogen turnover. (Korpassy, 1961) Moreover, some inorganic compounds also impair glycogen metabolism. Sporn *et al*. (1970), also observed loss of glycogen in the liver after prolonged exposure to cadmium chloride.The mechanism of metallic interference might therefore be different for the liver and muscles.Considering this aspect, glycogen was determined in the muscles and liver of rats fed on cobalt and manganese salts.

MATERIAL AND METHODS

Forty rats (Rattus rattus albino) of either sex were taken at randomly from laboratory stock, weighing 1000 $\pm$10 g with about 3 months in age. The rats were housed individually in separate cages, and fed on laboratory food supplied by Hindustan Lever Ltd . They received water *ad libitum* and were maintained under standard laboratory conditions as described earlier (Rana and Prakash 1986). After having acclimatized with laboratory conditions the rats were administered sub-lethal dose of cobalt (50 mg/Kg body weight)and manganese (250mg/Kg body weight) and the half dose of each one was given for combination of both metal salts .The treatment was schedule for thirty days. After the duration of treatment /exposure all rats were starved for 24 hours and than killed by decapitation. Skeletal muscles