

ULTRASTRUCTURAL VARIATIONS OF THE PITUITARY
INTERMEDIATE LOBE AND THE GLOMERULAR ZONE OF THE
ADRENAL CORTEX IN THE HYDRATED AND DEHYDRATED
GERBIL (*GERBILLUS PYRAMIDUM*)

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Contrasting with the relatively abundant literature available on the pituitary intermediate lobe and the glomerular zone of the adrenal cortex of laboratory rodents under normal and experimental conditions, data concerning rodents living in desert condition are sparse. We have thus undertaken electron microscopic study of the intermediate lobe and the glomerular zone of the gerbil *Gerbillus pyramidum*, a small rodent living in the Sahara arid zones. The gerbil is a granivore and does not drink any water. We examined the intermediate lobe and the glomerular zone of animals kept in the laboratory fed with dry or hydrated food. Our observations show that both the intermediate lobe and the glomerular zone exhibit clear-cut ultrastructural modifications. In the intermediate lobe of gerbils kept in dehydrated state, abundant secretory vesicles were scattered throughout the cytoplasm, the rough endoplasmic reticulum cisternae were sparse and the Golgi apparatus poorly developed. In the hydrated gerbils, secretory vesicles were few in the cytoplasm of melanotropic cells, although dense granules were constantly present in the Golgi area; the rough endoplasmic reticulum with often dilated cisternae filled large cytoplasmic areas. According to the variations of their morphology, melanotropic cells obviously exhibit a stimulated activity in hydrated condition and have a much lower secretory activity in dehydrated condition. In the glomerular cells of dehydrated gerbils, the rough endoplasmic reticulum cisternae and the Golgi apparatus were poorly developed, whereas an important liposomal compartment is observed. But in hydrated animal, the glomerular cells are characterised by the amount of endocytosis elements near the plasmic membrane, abundant lysosome and extension of the Golgi apparatus. These ultrastructural characteristics are closely related to the pick up of cholesterol from the circulatory low dense lipoproteins. In the hydrated gerbils, glomerular cells show as well, very developed chondriome and smooth endoplasmic reticulum, expressing important steroidogenesis activities. These observations strongly suggest the involvement of melanotropic cells and glomerular cells in the adaptation to desert life. The simultaneous stimulation of both melanotropic cells and glomerular cells in hydrated gerbils argue in favor of the hypothesis of existence of a regulatory axis between the pituitary intermediate lobe and the glomerular zone of the adrenal cortex which they could be involved in the regulation of hydromineral equilibrium in disruption condition.