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## The effect of different forms of prolonged motor deficit on the ultrastructure of limbic, extrapyramidal and neocortical regions of rat brain. Electron Microscopic study

**Mzia G Zhvania**

Ilia State University, Georgia

The ability of chronic motor deficit to produce alterations on the functioning of the central nervous system has been studied extensively. However, many questions still demand further investigation. Thus, the consequences of such limitation on the brain structure have been described only in a few studies. Moreover, the biggest part of research has been focused on restraint stress, while the effect of mild motor deficit are not well elucidated. In the present comparative electron microscopic study, we examine the effects of 40-day restraint stress and moderate motor deficit on the ultrastructure of limbic, extrapyramidal and neocortical regions of rat brain – the central and lateral nuclei of amygdale, the CA and CA3 hippocampal areas, caudate nucleus and neocortical motor area. Both types of motor deficit produce ultrastructural modifications, however the effects of diverse motor experiences are not the same. Chronic restraint stress produces much more significant pathologies, which are mainly concentrated in the central amygdale nucleus – brain region, which is actively involved in the organization of stress-response. Mild motor deficit produces mainly moderate modifications. They are concentrated mostly in the caudate nucleus, which is actively participates in motor and cognitive functions. In both cases the motor cortex retains almost normal ultrastructure. Therefore, we suggest that chronic motor deficit itself does not alter significantly the architecture of brain. More substantial modifications should produce stress, which often accompanies some forms of motor deficit.

### Biography

Mzia Zhvania is a Doctor of Science, Professor at Ilia State University and head of the Department of Brain Ultrastructure and Nanoarchitecture, I. Beritashvili Center of Experimental Biomedicine, Tbilisi, Georgia. She is an author of more than 80 scientific articles, published in reputed journals and the participant of numerous international scientific conferences. Mzia Zhvania permanently organizes international scientific mini-symposiums, concerning different aspects of neuroplasticity, Mzia Zhvania is a board member of two international scientific journals.

mzia\_zhvania@iliauni.edu.ge

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