

# Stress Causes Tissue-Specific Changes in the Sialyltransferase Activity

Sanja Dabelić, Mirna Flögel, Gordana Maravić, and Gordan Lauc\*

University of Zagreb, Faculty of Pharmacy and Biochemistry, Department of Biochemistry and Molecular Biology, A. Kovačića 1, 10000 Zagreb, Croatia. Fax: +385 1485 6201. E-mail: glauc@pharma.hr

\* Author for correspondence and reprint requests

Z. Naturforsch. **59c**, 276–280 (2004); received September 10/October 17, 2003

Numerous pathological conditions are associated with specific changes in glycosylation. Recent studies clearly demonstrated a link between stress and the development and course of many diseases. Biochemical mechanisms that link stress and diseases are still not fully understood, but there are some indications that changes in glycosylation are involved in this process.

Influence of acute and chronic psychological stress on protein sialylation as well as the activity of sialyltransferases, enzymes that synthesize sialoglycoproteins, has been studied on Fischer rats. Liver, spleen, kidney, skeletal muscle, heart, adrenal gland, serum, cerebellum, hippocampus, medulla oblongata and cortex have been analyzed. Statistically significant tissue- and type of stress-specific changes in total sialyltransferase (ST) activity were observed. Acute stress resulted in 39% increase of ST activity in liver and spleen, while at the same time there was 43% decrease in ST activity in cerebellum. In chronic stress, ST activity increased in spleen (93%) and decreased in liver (17%), cerebellum (38%) and hippocampus (64%). Western-blot analysis using *Maackia amurensis* and *Sambucus nigra* lectins did not reveal any difference in protein sialylation. The results of serum corticosterone analysis indicate that showed increase in acute stress and decrease in chronic stress are in good accordance with the hypothesis that corticosterone has a role in the regulation of liver ST activity.

*Key words:* Psychological Stress, Sialyltransferases, Sialoglycoproteins