

ANNOUNCEMENT OF HRZZ PROJECT ON THERAPEUTIC POTENTIAL OF ORAL GALACTOSE IN EXPERIMENTAL ALZHEIMER'S DISEASE

Salkovic-Petrisic M¹, Knezovic A¹, Osmanovic Barilar J¹, Reutter W†²

¹ Department of Pharmacology and Croatian Institute for Brain Reserach, University of Zagreb School of Medicine, Salata 11, 1 000 Zagreb, Croatia

² Institute of Laboratory Medicine, Clinical Chemistry and Pathobiochemistry, Charité, D-14195 Berlin-Dahlem, Germany

Objectives:

Currently approved therapy for Alzheimer's disease (AD) is symptomatic. New drugs failed in AD clinical trials indicating a need for novel anti-AD therapeutic strategies. The evidence of brain insulin resistance and glucose hypometabolism being the mediators of the sporadic form of AD (sAD) pointed to new approach in AD treatment which will be investigated by a 3-year project of the Croatian Scientific Foundation (HRZZ-GALAD). Galactose is C-epimer of glucose and can serve as alternative source of energy in the condition of low intracellular glucose. Our preliminary research brought the first evidence that oral galactose treatment has beneficial effects on prevention of cognitive deficit in experimental AD and this project aims to explore whether and how it can normalize already developed cognitive deficits in AD models.

Materials and Methods:

Streptozotocin-intracerebroventricularly treated rats (sAD model), and transgenic tg2576 mice (familiar AD model) will be used and their blood, cerebrospinal fluid (CSF) and brain tissue analysed following a single/chronic treatment with different oral galactose doses. Cognitive tests will measure memory impairment and radioactive-glucose positron emission tomography will follow cerebral glucose hypometabolism. ELISA, Western blot and immunohistochemistry will determine hormonal changes in plasma/CSF and the brain pathology in insulin receptor signalling, glucose metabolism and neurodegeneration.

Results and Conclusion:

Preliminary results demonstrated that, unlike a single dose, 2-month oral galactose treatment normalized cognitive deficits in STZ-icv rats while biochemical analysis is in progress. The project will contribute to elucidation of oral galactose as a novel therapeutic strategy in AD treatment.

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