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Elimination of the chemically modified proteins from the cell membranes prevents the cell degeneration

Halina Malina
Axanton Technology GmbH, Switzerland

Statement of the Problem: Most young people are healthy, and with aging, they develop the degenerative diseases. In the last thirty years, it was thought that the disorders in aging are genetic and cannot be prevented. We present here the proof of concept that the aging-associated diseases are not genetic, but develops because of the chemically modified proteins. The discovery leads to effective prevention of the cell degeneration in aging and infection permitting to keep people healthy longer and improving the quality of life.

Methodology & Theoretical Orientation: The peptides corresponding to the intrinsically disordered sequences were synthesized *in vitro* and incubated with xanthurenic acid to obtain the covalently modified polymers observed on the SDS-PAGE (patents). The polymers were injected into rabbits. The IgG's were isolated and tested in the primary cell cultures, *in vivo* in mice (outsourcing) and human, directly used by the investigator for her dermatitis and the metabolic disorder.

Findings: In a primary cell culture Xan led to the cell death caused by the covalently modified proteins. The regulatory sequences of the proteins, called intrinsically disordered sequences (IDSeqs) are preferentially modified. Any cell system cannot remove the chemically modified and polymerized IDSeqs. They alter the cell membranes leading to the caspases activation and cell degeneration. The author established a new technology targeting the chemically modified proteins. In mice, the molecule establishing membranes (MEMS) healed the *Staphylococcus aureus* and restored immunity in cyclophosphamide-treated mice using MEMS A-144 at five micrograms, weekly, on the mouth mucosa cured skin infection and cardiovascular disorder.

Conclusion & Significance: The chemically modified proteins must be eliminated to restore the cell homeostasis. MEMS stops the upstream cause of the pathology in infection or aging.

Figure 1: Elimination of the modified proteins by MEMS A-144 prevents the diseases for 11 years in human preventing infections and degeneration in e.g. CNS, cardiovascular.

Recent Publications:

1. Malina H (2014) Modification of intrinsically disordered sequences for the preparation of vaccines. Patent US8778349B2.
2. Malina H (2012) A rational basis for system biology in the aging-associated diseases: are genes or protein modifications the upstream cause? Journal of Molecular Engineering & Systems Biology. 1(1):3.

Biography

Halina Malina pursued her PhD in antibiotic biosynthesis working at the Medical School of Lodz (Poland). She is a Chemical Engineer from Polytechnic of Lodz, Lodz. Since 1984, she worked at the Institute of Chemistry of Natural Substances (CNRS), with collaboration with Pasteur Institute of Paris (France). In 1990 she worked as project leader in CNRS University in Zurich. She discovered the IDO in the eye and the role of xanthurenic acid in the cataract development. She followed the research on xanthurenic acid-induced cell pathology at universities in Lausanne, and Bern and ETH. Her research on the chemical mechanism of the diseases with aging met a strong opposition of the academia healing the transgenic mice. All support for research was rejected in 2004. She continued on her own and established the technology curing the infection and the aging-associated pathology.

malinahalinaz@axanton.com