

## Neuro-degeneration: Inhibition of protein biosynthesis, food and infections

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Biogenic amines, decarboxylated analogs of amino acids act as competitive inhibitors of aminoacyl-tRNA synthetases, enzymes of protein biosynthesis. At high concentration, biogenic amines can induce cell death via arrest of protein biosynthesis. Human cells and also microorganisms associated with food products and environment produce biogenic amines. The content of biogenic amines such as tyramine, histamine and tryptamine is high in common food products. Tryptamine appears as a suitable etiological factor killing neurons in human brain because in contrast to tyramine and histamine, tryptamine easily crosses blood-brain barrier (i) and tryptophan is not synthesized in human body and is a least available amino acid in food (ii). Thus the tryptamine inhibitory effect cannot be easily compensated by tryptophan. By other words, increased tryptamine prevents incorporation of tryptophan in proteins. The blockage of protein biosynthesis leads in cell death. The neuronal death is a major feature of all neurodegenerative diseases. Our experiments on human neuronal cells and mice demonstrate a massive neuronal loss induced by tryptamine at the concentrations inhibiting tryptophanyl-tRNA synthetase. Moreover amyloidosis and formation of neurofibrillary tangles, the manifestations of neurodegeneration were also induced by tryptamine in human neuronal cultured cells and mouse brain. Histologically manifestations induced by tryptamine are similar to those we found in autopsy brain of patients with Alzheimer's disease. For further analysis of samples of Alzheimer's disease patients and healthy controls we developed specific test, which reveals a link between microorganisms and disease.

### Biography

Elena Paley has completed her Ph.D. studies at the Engelhardt Institute of Molecular Biology, Moscow, Russia (1987) and postdoctoral studies at the Tel Aviv University School of Life Sciences, Israel. She is the adjunct faculty of Nova Southeastern University, FL, USA and founder and principal scientist of Expert Biomed, Inc., FL, USA. She has published papers in the field of protein biosynthesis, cell research, neurodegeneration and cancer in reputed journals and she is the inventor of USA issued and pending patents related to tryptamine-induced model of neurodegeneration.

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