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CogniXtra preventive treatment affords neuroprotection against amyloid beta 25-35 peptide-induced toxicity in mice

Objective: A number of encouraging research studies have shown the importance of nutritional approach in order to protect the brain health. Here we present the efficacy of a daily administration of a unique complex combination of liposomal omega 3 fatty acids and liposomal antioxidants (cogniXtra) as a neuroprotective treatment on early symptoms of Alzheimer's disease (AD) mouse model.

Methods: Mice were treated per os once a day with various combinations of liposomal nutrients such as Docosa Hexaenoic Acid (DHA), Glutathione (GSH) Curcumin (CUR) and Resveratrol (RES) including the special combination cogniXtra (GSH + CUR + RES + DHA) 20 days before and 7 days after the onset of the neurotoxicity induced by a central injection of amyloid-beta 25-35 (Aβ25-35)-oligomeric peptide. Protection against the neurotoxicity of Aβ25-35 was assessed carrying out two behavior tests evaluating short-term memory (Y-maze) and long-term memory (step through passive avoidance test (STPA) and the measurement of a key brain biomarker, Lipid Peroxidation (LPO).

Results: Our present research demonstrates the importance of a correct association of the different substances as the treatment with each of them alone was unable to provide any protection from the toxic effects produced by Aβ25-35 injection. CogniXtra formulation combining all of the components was the only one able to reverse completely all the memory deficits both in the Y-maze and in the STPA tests and also to completely protect from oxidative stress as demonstrated by the important LPO elevation measured in the hippocampus.

Conclusions: This study indicates that a combination treatment (cogniXtra) administrated for thirty consecutive days produces a complete neuroprotective effect on the neurotoxic effects produced by Aβ25-35 oligomeric peptide injection. The efficacy of a preventive treatment with cogniXtra in this preclinical model is similar to what could be achieved with other pharmacological approaches. These results strongly suggest the therapeutic interest of cogniXtra for the preventive treatment of AD.

Recent Publications

1. Belkouch M et al. (2016) The pleiotropic effects of omega-3 docosahexaenoic acid on the hallmarks of Alzheimer's disease. J. Nutr. Biochem. 38:1-11.
2. Chumakov I et al. (2015) Combining two repurposed drugs as a promising approach for Alzheimer's disease therapy. Scientific Reports. 5:7608.
3. Detrait E et al. (2014) Lack of synaptic vesicle protein SV2B protects against amyloid-beta(2)(5)(-)(3)(5)-induced oxidative

stress, cholinergic deficit and cognitive impairment in mice. Behavioural Brain Research. 271:277-285.

4. Lahmy V et al. (2014) Mitochondrial protection by the mixed muscarinic/σ1 ligand ANAVEX2-73, a tetrahydrofuran derivative, in Aβ25–35 peptide-injected mice, a nontransgenic Alzheimer's disease model. Frontiers in Cellular Neuroscience. 8:463.
5. Mazzanti G and Di Giacomo S (2016) Curcumin and resveratrol in the management of cognitive disorders: what is the clinical evidence? Molecules. 21(9).pii:E1243.

Biography

Francois J Roman holds a PhD in Biochemistry from the University of Paris VI, France. He has co-founded Amylgen in 2009. Previously, he served as the VP of R&D at Euroscreen, Belgium from 2004. Prior to this position, he had held various Drug Discovery management positions at Pfizer PGRD France, Parke-Davis France, Jouveinal Laboratoires, and Laboratoires Servier, where he started his career in 1977. He has more than 40 publications and 35 patents.

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