



International Conference & Exhibition on Pharmaceutical Regulatory Affairs

6-7 September 2011 Baltimore, USA

From basic research to drug development: The story of Copaxone (glatiramer acetate) in the treatment of multiple sclerosis and its new Applications

Rina Aharoni

The Weizmann Institute of Science, Israel

Multiple sclerosis (MS) is an inflammatory demyelinating disease of the central nervous system (CNS). The animal model - experimental autoimmune encephalomyelitis (EAE) is an essential tool for testing novel therapies and the elucidation of their mechanism of action. In view of the immunological nature of MS and EAE, attempts have been made to suppress the disease by desensitization procedures using specific antigens. The copolymer Glatiramer acetate (GA, Copaxone_®), does not exert encephalitogenic activity, but has a marked suppressive effect on EAE in various species. The beneficial effect and the high safety profile of GA were demonstrated in various clinical trials, resulting in its approval as a first line treatment for relapsing-remitting MS. The therapeutic activity of GA has been attributed to immunomodulatory effect at different levels of the immune response, mainly to the induction of specific cells that accumulate in the CNS and express *in situ* anti-inflammatory cytokines. Furthermore, recent studies indicate that GA treatment augments neuroprotection and repair processes, such as secretion of neurotrophic factors, remyelination and neurogenesis. These neuroprotective effects may counteract the neuropathological aspects of EAE and MS. Based on its immunomodulatory mode of action, additional potential applications of GA are investigated, such as prevention of immune rejection and amelioration of inflammatory bowel diseases (IBD).

Biography

Dr Rina Aharoni completed her doctorate in immunology at the Weizmann Institute of Science in Israel and Post doctorate in Stanford University. She returned to the Weizmann Institute, currently as Senior Staff Scientist. Her main research interest is the development of immunomodulatory and neuroprotective approaches and their *in situ* effect, on which she published more than 40 papers.