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Fixed-dose combination of a nanodrug and a quinoline moiety-containing compound

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A new fixed-dose injectable formulation containing two drug substances: A nanodrug – a polypeptide mixture from the Aglatiramoid family – and a small molecule – a quinoline moiety-containing compound (QMCC) – was developed with the aim of including both actives in a stable aqueous isotonic solution at the highest possible concentrations of each. Achieving this goal was not trivial due to the low stability and solubility of the QMCC at pH range 5.5–7, at which a nanodrug having a polypeptide length ranging from 20 to 200) is very stable. The QMCC solution is much more soluble and stable at pH values exceeding 7, at which nanodrugs begin to undergo degradation (stronger in more alkaline media). The addition of QMCC even at low concentration to the solution results in rapid gel formation. Numerous studies of various buffers, solvents and surface-active agents with various forms of QMCC (acid and salts) have consistently led to viscous solutions that gradually form gels, or to rapid formation of turbid gels. This problem was solved by the addition of a QMCC sodium salt to a solution of a nanodrug containing lysine at concentrations that produced a transparent isotonic solution which did not undergo gel formation during storage at 2-8°C for more than two years. Additional experiments performed with various amino acids at similar molar concentrations (histidine, alanine, proline, glycine) showed that they behave differently regarding gel formation: preventing/retarding (lysine, alanine), accelerating (histidine) or having nearly no effect on gel formation (proline, glycine).

Biography

G Linden completed her PhD in Chemistry from Leningrad University (St. Petersburg, Russia) and continued her Post-doctoral studies on immunoconjugates in Russia. She is currently a Chief Researcher in the Pharma division of Teva Innovative R&D. She participates in the development of new innovative drugs and implementation of their manufacturing methods in various countries. She has published more than twenty scientific papers in reputed journals and is a co-inventor of several patents on new drugs.

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