PHARMACEUTICAL FORMULATIONS OF TNF-ALPHA ANTIBODIES

Field of the Invention

The present invention relates to certain improved formulations of proteins. Specifically, the present invention provides use of certain excipients that are useful for stabilization of antibody preparations. Additionally, the novel formulation of the present invention prevents the formation of aggregates or fragments or modification of protein in solution during storage.

Background of the Invention

Proteins are large and complex molecules. They are required to be in their native confirmation in order to remain biologically active and not be immunogenic. Proteins having a high pI value or distinct polarity may not show stability in solution at or around physiological pH conditions. Further, at high concentration, protein molecules in solution are susceptible to undergo aggregation or degradation or certain modifications with time during storage. Most common protein degradation pathways known from literature are protein aggregation, deamidation and oxidation [Cleland et al. Critical Reviews in Therapeutic Drug Carrier Systems 10(4): 307-377 (1993)]. Degradation of protein during storage may take place due to chemical instability (i.e. any process which involves modification of the protein by bond formation or cleavage resulting in a new chemical entity) or physical instability (i.e. changes in the higher order structure of the protein). Chemical instability majorly can be result of deamidation, racemization, hydrolysis, oxidation, beta elimination or disulfide exchange. Physical instability can result from denaturation, aggregation, precipitation or adsorption. In an aspect, the present invention discloses suitable formulation of antibody proteins. Antibodies are highly complex molecules and are the fastest growing class of biologics in the pharmaceutical industry due to their therapeutic effectiveness in humans. However, antibodies are subject to undergo aggregation or degradation or denaturation or chemical modifications resulting in the loss of biological activity during the manufacturing process and / or during storage with time. Such protein modifications can also make them immunogenic resulting in the generation of anti-drug antibodies by the patient which can reduce the drug availability during subsequent injections or worse induce an autoimmune reaction. Therefore, there is a need to have stable new formulations for antibody preparations which protect the molecules from