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Poster Presentations

P-75

Development and characterization of a novel PEGylated liposome-encapsulated Ceratonia siliqua to improved sperm parameters

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Background: Ceratonia siliqua is found to have antioxidative properties that may inactivate free radicals and minimize the oxidative stress inside the testis cells in infertile male. Also, it is reported as a protective pharmacological agent against several diseases. In order to increase the drug stability, bioavailability, and to deliver the drug in the targeted tissue, it can be incorporated in a nano-sized vesicle of liposome formulations.

Objective: The aim of this study was to optimize the PEGylated liposome-containing carob to enhance the therapeutic response.

Materials and Methods: Polyethylene glycol (Lipoid PE 18:0/18:0-PEG2000, DSPE-mPEG 2000) and 1, 2-

Dipalmitoyl-sn-glycero-3-phosphocholine (DPPC) were purchased from Lipoid GmbH (Ludwigshafen, Germany). Cholesterol and all chemicals, solvents, and salts were bought from Sigma Chemical Company in St. Louis: USA. In this study, we synthesized liposome formulations containing cholesterol: DPPC: DSPE-PEG2000 at a molar ratio of 70:30:5 and thin-film evaporation method was used for the preparation of stealth controlled- release liposomal the carob. Outcome parameters were mean size of the vesicle, zeta potential, entrapment efficiency and in vitro drug release.

Results: The formulation of liposomal carob demonstrated that the optimum nano-vesicle size with an average diameter of below 100 nm. The vesicles have a suitable negative charge that are stable without aggregation at 4°C. The entrapment efficiency (EE%) for carob was above 80%. Moreover, the release profile of carob during 72 h was slow and continuous with an initial rapid release period followed by a slower release phase.

Conclusion: In conclusion, we successfully developed a stealth liposomal carob with a high potential for systemic delivery. The sustained-release properties of liposomal carob as a successful lipid-based nano-carriers that improves in vivo stability of the drug and leads to pharmaceutical benefits increase and loss of the drugs followed by the high-dose drug.

Key words: Liposome, Ceratonia siliqua, Infertility, Sperm.