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## Nano sized soy phytosome-based thermogel as topical anti-obesity formulation: An approach for acceptable level of evidence of an effective novel herbal weight loss product

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Obesity has become an increasing problem over recent years. Nano lipo-vesicles thermogel of soy extract were formulated and evaluated to reduce the size of adipose tissue cells through percutaneous absorption. Phytosome formulations were prepared with three different techniques: solvent evaporation, anti-solvent precipitation and co-solvency. Optimized formulae were selected using Design Expert<sup>®</sup> (Version 7.0.0, Stat-Ease Inc. Minneapolis, MN) the means of the highest entrapment efficiency, minimum particle size and maximum drug release and then evaluated for successful complex formation by means of FTIR. Particles zeta potential was detected. Particles shape was evaluated using TEM to insure particles spherical shape and non-

aggregation. Optimized phytosome formulae were involved into selected thermogel formulation after evaluation of different plain formulations for clarity, homogeneity, pH, gel transforming temperature and viscosity. Phytosomal thermogel formulation was then re-evaluated for its clarity, homogeneity, pH and gel transforming temperature and for its rheology behavior and permeation study. *In vivo* study was done to ensure anti-obesity effect of soy phytosomal hydrogel. Concisely, soy phytosomal thermogel was found to have the ability to reduce the size of adipose tissue cells of the abdomen in male albino rats.

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