Objectives & Rational behind the study

Objectives of the proposed work

The objective of the study is as follows:

1) To develop the Glipizide microemulsion for human and veterinary use.
2) To formulate a suitable method for the preparation of microemulsion.
3) To evaluate different parameters of the best formulations.
4) To determine in vitro bioavailability of the Glipizide.
5) To determine the drug release of the optimized formulation.

Rational behind the study

The main objective of this study is to develop an oral microemulsion formulation of Glipizide for human and veterinary use.

Glipizide is a rapidly absorbing drug having faster elimination rate with short half-life. Therefore, it is routinely administered two to three times daily. This makes it a suitable candidate to be formulated for the sustained delivery. As Glipizide (hydrophobic drug) is solubilised in dispersed phase (O/W Microemulsion), the sustained release can be obtained because the dispersed phase globule is surrounded by thick layer of emulsifying agents. ME have very low surface tension and small droplet size which results in high absorption and permeation. We have planned our work to formulate Glipizide ME due to its well known characteristics like increase in half life, sustained released effect of the drug and its greater thermodynamic stability.

ME have been widely used to enhance the bioavailability of poorly soluble drugs. Glipizide is a poorly soluble drug and absorbed from the intestine. O/W ME prevents degradation of Glipizide by passing through stomach and hence it will be completely absorbed from intestine. These result into increase in bioavailability. The small droplets of ME also provide better adherence to the membranes and transport the drug molecules in a controlled fashion. ME are easy to administer to geriatric and paediatric population.

From the basic literature search, we found that type 2 diabetes is the most common disease for cats as well. So we target this formulation is to be used for cats as a veterinary preparation, due to its ease of administration (orally by using syringe), lower particle size (when compared to a conventional dosage forms), high bioavailability with the effect of sustained release (less dosing frequency).