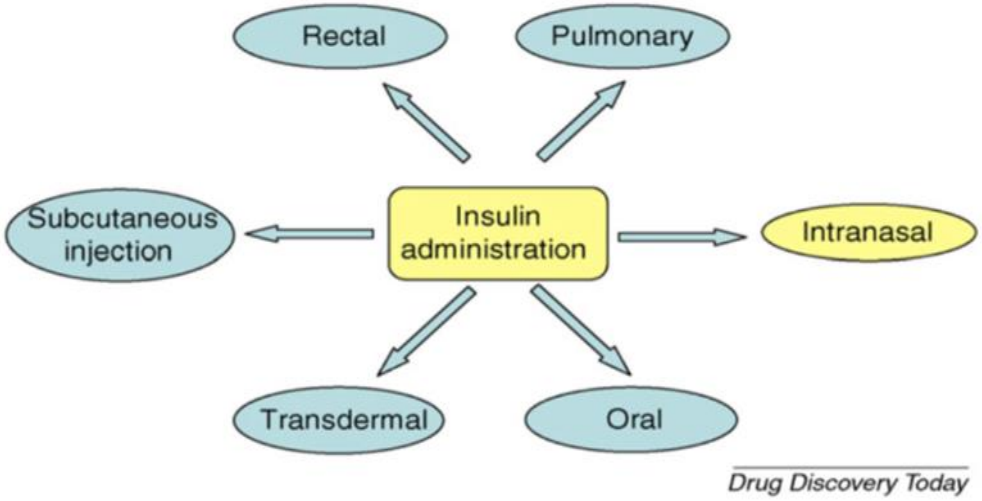

(Figure 1.2): The main administration routes for insulin (Duan & Mao, 2010)

A transdermal system is a common route of insulin delivery systems being developed. Skin offers the advantages of an easy access and a very large surface area (1-2 m^2) (Paudel et al., 2010). However, it represents an effective barrier that limits penetration of large, hydrophilic polypeptide, like insulin, as the stratum corneum, the outermost layer of the skin constitutes the major barrier. Various methods have been tested overcome the skin barrier and to allow insulin absorption. They can be separated into chemical (liposome and chemical enhancers) and physical methods (mainly iontophoresis and sonophoresis) (Lassmann-Vague & Raccah, 2006). Sintov, A.C. et al. have done the study for transdermal insulin delivery by using topical iodine. The pretreatment of skin with iodine followed by a dermal application of insulin results in reduced glucose level and elevated hormone levels in the plasma. Topical iodine protects the dermally applied insulin by inactivation of endogenous sulfhydryls, which can reduce the disulfide bonds of the hormone. Thus, the effect of iodine is mediated by retaining the potency of the hormone during its penetration via the skin into the circulation (Shah et al., 2010).