# Rational Design of Hydrocolloid-based Oral Delivery Systems for Bioactive Agents

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The design and development of nanoparticle- and microparticle-based oral delivery systems for the encapsulation, protection, and controlled release of bioactive agents has grown considerably in the agrochemical, cosmetic, food, personal care, and pharmaceutical industries. These colloidal delivery systems can be utilized to overcome problems such as poor solubility, low activity, and chemical instability of active agents, as well as to create novel functional attributes such as controlled or targeted delivery. In this presentation, the utilization of hydrocolloids for the rational design of oral delivery systems is given. In particular, a systematic approach, referred to as “delivery-by-design” (DbD), is described to make the design and fabrication process more efficient and effective. Initially, a brief review of some of the challenges associated with incorporating bioactive agents into commercial products is given, and then an overview of different kinds of simple and complex hydrocolloid-based delivery systems is given. Utilization of the DbD approach may lead to more rapid design of efficacious and economically viable hydrocolloid-based delivery systems for commercial applications.