

Probiotic Formulation Development and Local Application with Focus on Local Buccal, Nasal and Pulmonary Application

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These days, probiotics are commonly used in functional foods or as dietary supplements. But its positive effect goes far beyond the digestive tract. Local effects of probiotics are currently being studied intensively. The aim of this review paper is to provide an overview of the current state of clinical research of local application of probiotics and to present the benefits and opportunities of probiotic formulation development. This review summarizes the local effect of probiotics in the oral cavity and in the nose, which has already been examined in some clinical studies. A local pulmonary effect is also of particular interest. In this case, however, studies were only carried out on animals but already elucidated its potential. Various solid and liquid dosage forms are suitable as vehicles for local application. An improved formulation of probiotic products based on pharmaceutical formulation development might bring many different advantages for the effectiveness and duration of action, but also the stability of the probiotic products. Possibilities for the development of suitable probiotic formulations using different methods are presented and explained in more detail. Despite a large number of clinical studies on local probiotic application reviewed in this article, no major progress has yet been detected regarding probiotic formulation development. Mostly pure bacterial cultures were administered to the test subjects. Nevertheless, there is large potential at this point to further improve the effect of probiotics by developing actual pharmaceutical formulations.

Keywords: Probiotics, encapsulation methods, formulation development, buccal application, nasal application, pulmonary application.