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### Formulation of nasal drug delivery systems to induce systemic and central nervous systemic effect

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In the last decades the nose has become one of the most researched among the alternative drug administration routes. The reason of the considerable attention is, that due to its unique anatomical and physiological properties, local, systemic and direct Central Nerve System (CNS) effects can be available. In the case of those therapies (e.g. CNS diseases, brain tumors), where the point of attack is in the brain, nasal drug administration can improve the efficiency of the treatment [1]. Particle size decreasing into the nano range is an up-to-date and common way to modify the properties of drugs that can affect its bioavailability in a positive way [2]. The aim of this research is to formulate and develop nasal dosage forms for lamotrigine (LAM), that is a BCS II. antiepileptic drug and only available on the market in tablet form [3]. Since the beginning a nanosized LAM containing nasal powder has been produced, the process of sample preparation has been optimized and the samples were tested *in vivo* [4]. Also, a LAM containing nanocapsule (NC) formulation has been produced and investigated *in vitro* and *in vivo*.

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