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I. Symposium of Young Researchers on Pharmaceutical Technology, Biotechnology and Regulatory Science

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Formulation and investigation of novel, carrier-based dry powder inhalation system

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Administration of the drug via the lung has several advantages in the treatment of lung diseases, such as cystic fibrosis and chronic obstructive pulmonary disease. Thus, the development of dry powder systems (DPIs) containing antibiotic [1] and non-steroidal anti-inflammatory [2] agents is on every account warranted. In the case of development, it should be borne in mind that the active ingredient particles have a good morphology and low density, between the average particle size of 1-10 µm and the cohesion between the particles is as small as possible. Furthermore, the product must have adequate stability and be compatible with the used inhaler and capsule. The aim of this work is to produce and investigate an antibiotic-containing novel, carrier-based DPI system, that combines the advantageous behaviours of traditional, carrier-based; and carrier-free DPI systems with the use of a combined formulation technique [3]. The studies show that the combined formulation has favourable physical properties, high lung deposition (*in vitro*, *in silico*), it is compatible with the used capsule (high emitted fraction) and stable.

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