Abstract example:

Development and *in vivo* efficacy of biocompatible drug-loaded microspheres against C*. parvum*

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Human cryptosporidiosis is one of the most commonly diagnosed protozoan-associated intestinal diseases worldwide. It is one of the main causes of diarrhoe in immunocompromised hosts [1]. There is no completely efficient treatment. Based on previous work [2], an alternative therapy against *Cryptosporidium parvum* using bioadhesive Paromomycin and Diloxanide Furoate (DF)-loaded microspheres was developed. Microspheres (MS) were prepared using chitosan (CHI) and poly(vinyl alcohol) (PVA) and two types of cyclodextrins (β-CD and DM-β-CD) for potential use. Microparticle formulations were characterized in terms of size, surface charge, drug release and morphology. *In vivo* bioadhesion properties of CHI/PVA microspheres were also evaluated. In addition, the *in vivo* efficacy of CHI/PVA microspheres against *C. parvum* was tested in neonatal mouse model of cryptosporidiosis.

Microspheres prepared by spray-drying showed spherical shape, diameters between 6.67 ± 0.11 and 18.78 ± 0.07 μm and positively surface charge. The bioadhesion studies demonstrated that MS remained attached at +16h (post-infection) to the intestinal cells. The efficacy of treatment determined in mice receiving orally administered microspheres with and without drug showed significantly lower parasite loads compared with the control.

Our results suggest that microspheres are safe and simple systems for anticryptosporidial treatment. This work demonstrated the high potential of using bioadhesive chitosan/PVA microspheres for antiparasitic drug delivery by oral route in the treatment or prevention of *C. parvum* infections.

[1] Bouzid, M. et al., 2013. Clin Microbiol Rev. 26, 115–34.

[2] Luzardo-Álvarez, A. et. 2012. Eur. J. Pharm. Sci. 47, 215-227.