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Up to date advances in nano-carrier systems for oral delivery of antidiabetic peptides

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Current progresses in pharmaceutical biotechnology have led to the discovery of numerous antidiabetic peptides. Nevertheless, these drugs like insulin, GLP-1 and its analogs are currently administrated parenterally, a route which is not well accepted by patients, and also does not mimic the endogenous pathway of insulin or GLP-1 secretion. Aiming to overcome the various disadvantages of this delivery route, tremendous efforts have been recently devoted for oral antidiabetic peptides administration. Based on the evaluation of recently published papers, it can be concluded that among numerous approaches to enhance the antidiabetic peptide oral bioavailability, much of the success was recorded using different nanocarrier systems including solid lipid nanoparticles, micelles, polymeric nanoparticles, liposomes and nanoemulsions. A successful nanocarrier should protect the peptide from the harsh environment within the GIT, and facilitate both mucus permeation and epithelial absorption. Besides, there is an integral need to prove that the benefits of these nanosystems overweight their risks, further *in vivo* and human studies must be conducted to know more about the effect of these carriers on the pharmacokinetics and efficacy of antidiabetic drugs. Despite these significant research efforts, there is still no FDA approved oral insulin or GLP-1 analog on the market. Thus, research in this area should be continued at even a higher pace to access a safe and effective nanosystem that could be completely accepted for chronic treatment of diabetes. This review emphasizes the challenges, advantages and limitations of different possibilities with a critical thinking and aiming to select the proper way for further steps in the field.

Biography

Ruba Ismail has completed her Master's study in Pharmaceutical Sciences in 2015 from Tishreen University, Latakia, Syria. Presently, she is a 1st year PhD student at Szeged University, Faculty of Pharmacy, Institute of Pharmaceutical Technology and Regulatory Affairs, Szeged, Hungary.

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