

# **Synthetic peptides and its versatile application as the active ingredient of biopharmaceuticals**

## **Péptidos sintéticos y su versatilidad de aplicación como ingrediente activo de productos biofarmacéuticos**

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### **Abstract**

Among the natural products, pharmaceutical industries had rekindled the interest in peptides, due to the current novel technological accomplishments, strategy developments, advances in the areas of formulation and enhanced drug delivery technology of peptides. Today, more than 40 peptides are in the pharmaceutical world market, and more than a hundred are in several clinical phases. Peptides as drugs show unique characteristics (high biological activity, high specificity and low toxicity), thereby making those particularly attractive therapeutic agents. The major obstacles that peptides face for becoming APIs are the lack of oral bioavailability and low stability under physiological conditions. Thus, the interest shown by the pharmaceutical industry in peptide research declined and more efforts were made in the field of small molecules that mimic peptides. Advances in fields of formulation, drug delivery technology and chemical modifications, rekindled the interest in peptides, thereby leading to highly successful peptide drugs. In this communication, chemical current strategies carried out in our laboratory to facilitate peptides as drugs will be reviewed. Finally, the use of nanotechnologies for drug delivery to overcome the problems associated with the poor pharmacokinetic properties of natural product based drugs will be discussed.

**Keywords:** peptides, solid-phase synthesis, nanotechnologies, drug delivery systems