

# World Drug Delivery Summit

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## Physico-chemical and physic-mechanical characterization of polypeptide-k: A phyto-insulin for oral delivery

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Polypeptide-k is an anti-diabetic protein isolated from dried seeds of the ripened fruits of *Momordica charantia*. In last one decade, extensive research has been carried out on polypeptide-k to explore its potential applications in the treatment of diabetes mellitus. It is widely marketed in combination or alone in the form of tablets in Malaysian as well as Indian markets. However, the physic-chemical and physico-mechanical properties of the drug remain unexplored hitherto. Our study, for the first time, reports the vital preformulation parameters of the peptide molecule. The knowledge of these parameters will not only support the formulation development and evaluation but will also help in compiling the monograph of this peptide drug.

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## Nanoplatfoms for cancer targeting and image-guided drug delivery

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The Molecular Imaging and Nanotechnology Laboratory at the University of Wisconsin - Madison is mainly focused on three areas: 1) development of multimodality molecular imaging agents; 2) nanotechnology and its biomedical applications; and 3) molecular therapy of cancer. In this talk, I will present our recent work on molecular imaging and image-guided drug delivery of cancer with peptides, proteins, and a variety of nanomaterials. The primary imaging techniques used in these studies are positron emission tomography (PET), optical imaging, and magnetic resonance imaging (MRI). Three of the major molecular targets that we are investigating are CD105 (i.e. endoglin), VEGFR, and integrin  $\alpha\beta 3$ . The nanomaterials that will be discussed in this presentation include nano-graphene oxide, zinc oxide nanomaterials, micelles, silica-based nanoparticles, magnetic nanoparticles, among many others.

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