

Potent New Class of Opioid Peptide Analgesics

Background: Since their discovery in the early 1970's, endogenous opioid peptides have been researched for their applicability as analgesics and as a replacement for naturally occurring alkaloids such as morphine or codeine. However, one of the difficulties in producing opioid peptides for use as pharmaceuticals is a result of their inability to penetrate the blood brain barrier (BBB). This barrier enables transport of compounds necessary for proper brain function while preventing unwanted substances from entering. Optimization of opioid peptides for transport across the blood brain barrier would enable their use as therapeutics for moderate to severe pain in a clinical setting.

Applications:

- *Development of opioid glycopeptides with improved intravenous potency and in-situ BBB permeability*

Advantages:

- *Series of compounds developed that are more potent and have a longer half life than fentanyl*
- *Increased transport across the blood brain barrier for targeted therapeutic delivery*

The Technology: Researchers at the University of Arizona have developed a series of μ -agonist opioid peptides based on a modified enkephalin analogue DAMGO. The compounds developed are highly amphipathic and bind tightly to model membranes in vivo. The water solubility of the compounds has also been enhanced leading to an overall increase in bioavailability. Furthermore, the ability of the compounds to associate with cellular membranes enables their transport across the blood brain barrier. Optimization of this highly potent, novel class of compounds may lead to the development of a replacement for naturally occurring alkaloids such as morphine, codeine or petroleum derived drugs such as fentanyl.

Lead Investigator: Robin L. Polt Ph.D., University of Arizona, and Edward J. Bilsky Ph.D., University of New England

Status: Ready for licensing

Refer to Case # UA07-002

Contact Mike Trammell
trammell@email.arizona.edu

