Researchers at the University of South Florida have isolated polypeptides that are useful for the treatment of respiratory syncytial virus (RSV).

RSV is a major factor regarding bronchiolitis and acute lower respiratory tract infections in infants and young children. The annual cost of hospitalization in the United States for RSV-associated infections in pediatric patients is greater than $300 million dollars. Additionally, this virus is also a serious threat to immunocompromised individuals and to the elderly. Currently, there are no effective vaccines available to treat RSV infections and treatments typically include rest, fluid consumption and over the counter medications to reduce fever. This highlights the need for an efficient vaccine to treat RSV related disorders.

USF researchers have designed and developed multifunctional micellar nanoparticles to deliver peptide inhibitors of viral fusion. This strategy, used for preventing RSV infection, blocks the entrance of viruses within a host cell which is accomplished by using decoy peptides that specifically bind to the HR2 domain of the RSV fusion protein. Further, lipid micellar nanoparticles are used to deliver the peptide inhibitors to cells. Laboratory research showed that one such micelle complex was taken up with 90% efficiency. This micelle complex has proven to be an effective inhibitor of RSV fusion. These micelle-encapsulating peptides have the potential to be used as a therapy against various RSV related infections and have many advantages over existing treatment methodologies.

ADVANTAGES:
- Effective treatment for RSV infections
- Efficient uptake due to micellar design
- Direct-to-cell delivery
- Inexpensive compared to existing treatment methodologies

Novel Micellar Nanoparticles with Inhibitor Peptides

A Portion of the Nanoparticle Self-Assembly Model

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