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Materials & Methods for Reducing Inflammation by Inhibition of the Atrial Natriuretic Peptide Receptor

Researchers at the University of South Florida have developed a novel treatment for inflammatory diseases, including human respiratory syncytial virus and asthma.

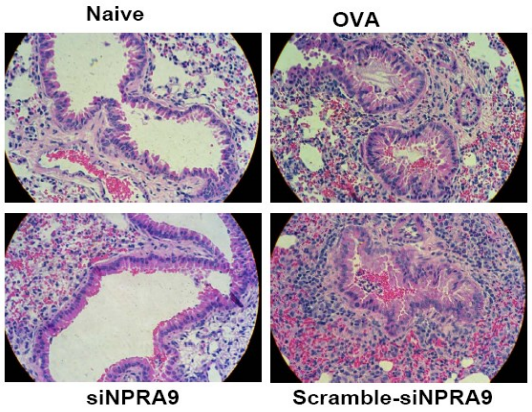
Inflammatory diseases include a large number of disorders that exhibit a primary symptom of inflammation. Examples include asthma, allergies, autoimmune diseases, and hepatitis. Inflammation is a natural part of the disease fighting process where the body's white blood cells produce substances that protect us from infection from foreign organisms, like viruses and bacteria. However, much of the damage from diseases that trigger an inflammatory response is caused by the inflammatory process itself. By stopping progression of the inflammatory pathway, unnecessary damage to the body can be prevented.

Our investigators have developed a method of silencing a newly discovered target in the inflammatory pathway, which decreases inflammation. The method uses a molecule called siRNA, which is a fragment of genetic material that targets and silences a specific gene, thereby halting the production of inflammatory molecules that the gene codes for. Our researchers developed a method of administering the siRNA intranasally, which avoids the degradation of siRNA in the bloodstream, a problem with other siRNA therapies. Additionally, the siRNA is delivered with a nanoparticle to improve its absorption into target cells, which is another improvement over existing siRNA therapies. This therapy demonstrates significant alleviation of inflammation in animal experiments and shows promise for clinical adaptation.

ADVANTAGES:

- **Halts the production of damaging inflammatory molecules**
- **Avoids degradation of siRNA in the bloodstream**
- **Improved siRNA absorption**

Novel siRNA Therapy Achieves Significant Alleviation of Inflammation



siRNA Treatments (Bottom) Decrease Inflammation in Mice Lungs

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