

# 'Antedrugs': A safer approach to drug therapy

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Corticosteroids are powerful drugs used to treat inflammatory conditions such as asthma and other chronic diseases which has made them among the most widely prescribed drugs. Although the anti-inflammatory drugs offer swift relief to the patient, they can carry with them serious side effects. For example, the inflammatory steroids used to treat a child's asthma, but can stunt the child's growth over time. Similarly, adult treatment of Addison's disease, which President John F. Kennedy endured, can lead to the development of diabetes and hypertension.

For more than 20 years, one research team has been working to develop a safer approach that would eliminate [inflammation](#) without causing damage to the body. Such drugs, called "antedrugs" have been developed in a lab at Florida A&M's College of Pharmacy. The efforts have been spearheaded by Dr. Henry J. Lee who has led antedrug research in anti-inflammatory, anti-AIDS and anti-cancer drugs for nearly 30 years.

## A New Study

Lee and his team have recently completed a new study entitled, Anti-Inflammatory Activities of New Steroidal Antedrugs Isoxazoline Derivatives. It was conducted by Drs. Henry J. Lee, Younes J. Errahali, LeeShawn D. Thomas, Brenda G. Arnold and Glory B. Brown, all of the Florida Agricultural and Mechanical University, College of Pharmacy and Pharmaceutical Sciences, Tallahassee, Florida. The researchers will discuss their work at the 122nd Annual Meeting of the American

Physiological Society which is part of the Experimental Biology 2009 scientific conference.

## The Study

Antedrug design is a new approach to create safer drugs that attack a problem such as inflammation then quickly become inactive before they can cause damage. The primary objective of this study was to synthesize a new group of corticosteroids that have anti-asthmatic and anti-inflammatory properties without adverse side effects.

The researchers synthesized new antedrugs, isoxazoline derivatives, from prednisolone. They then tested the derivatives in a test tube and found that antedrugs effectively reduced inflammation. In fact, they found isoxazoline derivatives were five times more potent than prednisolone in binding affinities to the cell corticosteroids receptors and reducing inflammation.

The researchers also studied the isoxazoline derivatives in the lung and liver cells of rats and found that the antedrugs significantly reduced the cell inflammation. In addition, the rat plasma began metabolizing rapidly the antedrugs to an inactive form with the half lives less than five minutes and more than 95% of prednisolone remained unchanged even after 100 min incubation.

## Results

These results suggest that isoxazoline derivatives compared to conventional [steroids](#) improve topical anti-inflammatory activity without causing systemic damage. "This is a very promising outcome," according to Dr. Lee. Additional studies are currently underway, using a new group of [corticosteroids](#) in the treatment of [asthma](#) exacerbation and chronic

pulmonary inflammation without systemic [side effects](#) such as body weight and hypothalamic-pituitary-adrenal axis change.

Source: American Physiological Society ([news](#) : [web](#))

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