University of Reading offers alternative to animals in drug tests

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Pioneering research by the University of Reading has developed a new way to test the adhesive qualities of drugs under laboratory development which could replace the current practice of using animal tissue.

The study by Reading School of Pharmacy, funded by the Biotechnology and Biological Sciences Research Council, has produced a synthetic tissue, a hydrogel, which mimics the properties of mucosal tissues, such as that found in the mouth and stomach, to assess how medicines will react in the body. Mucosal tissues taken from animals are commonly used in the development phase of new drugs.

Conventionally, tablets are given orally to patients for treating various diseases. These drugs pass through the patient's digestive system which breaks down the drug into its constituting components and flushes the rest of the compound out of the body. Consequently, only a small percentage of the medicine enters the patient's circulatory system, limiting the drug's effectiveness.

However, tablets that can attach to mucosal tissue extend the time the drugs remain in the body, reducing the frequency of dosing, and also offer the possibility of targeting particular body sites. Common conditions treated by mucoadhesive drugs include angina and inflammatory diseases.

Dr. Vitaliy Khutoryanskiy, from Reading School of Pharmacy, said: "Mucosal tissues taken from animals are used by the pharmaceutical

industry in the development of drugs to prolong the time that tablets are in contact with the mouth's mucosal lining. The use of animal tissues in adhesion experiments doesn't always produce the best results because of their variable properties.

"The new synthetic hydrogels mimicked the porcine mucosal tissues that we used in our study better than any other material we tested, and could prove a real alternative to using animal material for testing the mucoadhesive properties of future medicines."

More information: The paper, 'Developing synthetic mucosa-mimetic hydrogels to replace animal experimentation in characterisation of mucoadhesive drug delivery systems,' is published in *Soft Matter by the Royal Society of Chemistry* today, at xlink.rsc.org/?doi=10.1039/C1SM05929G

Provided by University of Reading