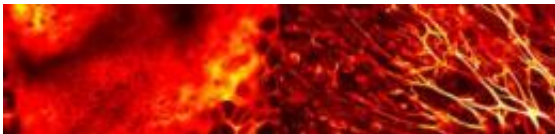


Interactions between substances determine allergenic potential

December 20 2011



This is skin photographed in the two-photon microscope, showing epidermal cells and the collagen present in the dermis. Photo: Carl Simonsson

Scientists at the University of Gothenburg, Sweden, have used advanced light microscopy to show that a substance can be differently absorbed by the skin, depending on what it is mixed with. This may determine whether it causes contact allergy or not.

"We have also been able to identify specific cells and proteins in the skin with which a contact [allergen](#) interacts. The results increase our understanding of the mechanisms behind contact allergy", says Carl Simonsson at the Department of Chemistry, University of Gothenburg.

The skin is the largest organ in the [human body](#) and plays many vital roles, one of which is to prevent harmful microorganisms from invading the body. The principal barrier is constituted by a layer of [skin cells](#) around a few microns thick, known as the "stratum corneum". Despite being so thin, this layer effectively protects us from e.g. [bacteria](#) and viruses.

The skin, however, is not adapted to deal with and prevent absorption of many of the chemicals that we are exposed to today. This may lead to various types of diseases, such as contact [allergy](#), which affects approximately 20% of people in Sweden.

The work presented in Carl Simonsson's thesis describes the use of an advanced form of [light microscopy](#) known as "two-photon microscopy", which makes it possible to follow substances absorbed into the skin. The method is unique in that it allows us to see not only how well a substance is absorbed, but also what happens to it, and the location in the skin that the substance eventually comes to.

The skin barrier and the way in which various substances are absorbed are highly significant also for the development of [new drugs](#). Creams and ointments are for many reasons an interesting alternative to tablets, which have to be taken by mouth. The barrier properties of the skin may in this case present an obstacle to drug absorption, making it difficult for sufficient amounts of the drug to penetrate the skin to give a clinical effect.

"We have used two-photon microscopy to study a new type of ointment that it may be possible to use to improve the absorption, and thus the clinical effect, of certain drugs that are used on the skin", says Carl Simonsson.

Provided by University of Gothenburg

Citation: Interactions between substances determine allergenic potential (2011, December 20) retrieved 30 April 2024 from <https://medicalxpress.com/news/2011-12-interactions-substances-allergenic-potential.html>

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