Tan stimulant may bronze even the fairest skins

20 September 2006
From New Scientist Print Edition. Subscribe and get 4 free issues.
John Pickrell

Could it be goodbye to the porcelain-skinned English Rose? A paint-on treatment has been developed that may one day allow a real tan without sun, for even very fair skins. The key chemical, a plant extract called forskolin, protected mice against UV rays and allowed them to develop a natural tan by stimulating pigment-producing cells called melanocytes.

The ability to tan is largely controlled by a hormone called melanocyte-stimulating hormone, which binds to the melanocortin 1 receptor (MC1R) on the outside of melanocytes. Many people with with red hair and fair skin have a defect in this receptor, meaning they find it almost impossible to tan and are prone to skin cancer.

John D'Orazio of the University of Kentucky College of Medicine in Lexington, US, used depilated mice with defective MC1Rs to show that applying forskolin to the skin can restore their ability to produce the skin pigment melanin. When it was applied for four weeks before mice were exposed to UV light, they were subsequently able to tan.

In a second experiment, a particularly cancer-prone strain of mice, also bred to lack effective MC1Rs, were exposed to the equivalent of 1 to 2 hours of midday Florida sunlight each day for 20 weeks. Nine control mice developed 11 tumours and showed other evidence of skin damage, while nine mice treated with forskolin developed just six tumours. Their skin also showed less evidence of damage (*Nature*, vol 443, p 340).

"We see no logical reason why it shouldn't work in humans too," says D'Orazio, although no clinical trials have yet taken place. Because forskolin stimulates melanin production, it could give fair-skinned people a natural tan that would also afford some protection from the sun. Unlike UV-blocking creams, the forskolin tan would have the added benefit of not washing off.

Since forskolin has also been shown to cause a degree of tanning in mice with normal MC1Rs, it might allow sunless tanning for all skin types, says D'Orazio.

From issue 2570 of New Scientist magazine, 20 September 2006, page 15