

Topical retinoids for skin ageing

Dr Paul Charlson describes the anti-ageing properties of retinoids and how long patients have to use them before seeing an improvement

Retinoids form the basis of a multi-billion pound industry in skin creams with anti-ageing properties.

The major effect of retinoids is that they reduce fine wrinkles. They also promote keratinocyte proliferation, strengthen the protective function of the epidermis, reduce transepidermal water loss, protect collagen against degradation and inhibit metalloproteinases activity.¹

Other positive effects of retinoids are a proliferation of blood vessels, which improves skin colour, fading of lentigo and an improvement in rough patches of skin.

RETINOIC ACID

There is a significant body of evidence demonstrating the anti-ageing properties of tretinoin (retinoic acid). It has been shown to:

- rejuvenate the epidermis²
- treat photo-ageing and dyspigmentation³
- thicken the epidermis and increase collagen production⁴
- increase type-1 collagen production by 80% and flatten the stratum corneum.

The standard dose of retinoic acid is 0.05%. It takes at least three months for patients to see an effect with use, and significant improvements in the dermis can be seen at 12 months.⁵

RAPID RETINISATION

Rapid retinisation – in which high concentrations of retinoic acid are used to shorten the time to clinical response – has been shown to be effective, with 14 days of tretinoin 0.25% showing similar improvement to a dose of 0.05% after 12 months.

The level of skin irritation is generally much greater with higher concentrations of retinoic acid. The changes reverse on cessation of therapy.⁶

RETINOL

Retinol (all-trans retinol) is a precursor of retinoic acid and has also been shown to have anti-ageing effects.

Retinol is 20 times less potent than tretinoin. However, retinol has been shown to have better effects than tretinoin at similar doses and it is less irritant.

The optimal concentration of retinol – balancing skin irritation against effect – is debatable.⁷

One of the problems with retinol is that it is unstable in UV light and high temperatures.

An oilier vehicle improves the stability in UV light, whereas the type of emulsifier affects the temperature stability.⁸

RETINYL ESTERS

Retinyl esters, such as palmitate and acetate, are often used in what are known as 'cosmeceutical products'.

They are very stable but they need to be converted to retinol and then retinoic acid in the skin. The result of this is that they are less effective as anti-ageing preparations – they take longer to work and show less dramatic improvements.⁹



GETTY IMAGES/HANS NELEMAN

Retinoids can reduce fine wrinkles

ADAPALENE

Adapalene is the only retinoid currently available on NHS prescription.

There are few studies that show its efficacy as an anti-ageing treatment. One study showed that adapalene was comparable to tretinoin 0.05% for anti-ageing.¹⁰ It is less irritant than many other preparations and so may prove useful.

Further research into delivery systems of these products will undoubtedly optimise their efficacy. Nanostructured lipid carriers are of particular interest.

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