Tiny nanocarriers could prove to be the magic bullet for acne sufferers

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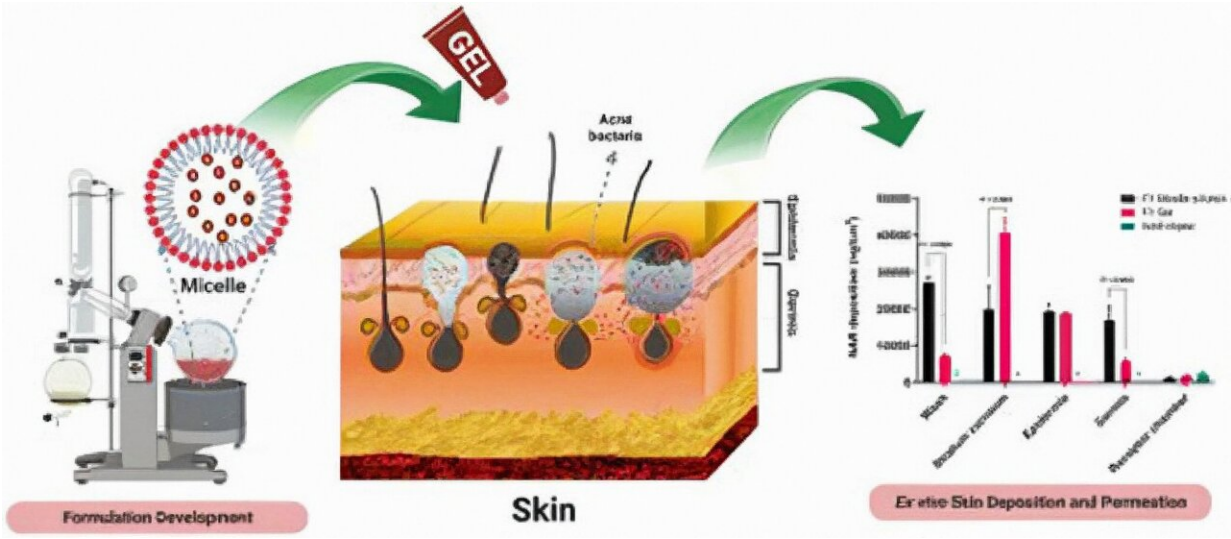

Credit: *Nanoscale* (2023). DOI: 10.1039/D3NR01789C

It's a skin disorder that makes life miserable for around 800 million teenagers and adults worldwide, but Australian scientists may have found an effective treatment for acne, delivered via tiny nanoparticles.

In a study led by the University of South Australia (UniSA), a new antibacterial compound known as Narasin was encased in tiny, soft nanoparticles 1,000 times smaller than a single strand of human hair and applied in a gel form to targeted acne sites.

The drug—more commonly used in the livestock industry—proved successful against drug-resistant acne bacteria and delivered via nanocarriers achieved a 100-fold increase in absorption than simply taken with water.

The findings have been published in the journal *Nanoscale*.

Lead author UniSA Ph.D. student Fatima Abid says this is the first time that nano-micelle formulations of Narasin have been developed and trialed.

"Acne severely impacts approximately 9.4% of the world's population, mainly adolescents, and causes distress, embarrassment, anxiety, low self-confidence and social isolation among sufferers," Abid says.

"Although there are many oral medications prescribed for acne, they have a range of detrimental side effects, and many are poorly water soluble, which is why most patients and clinicians prefer topical treatments."

Abid's supervisor, pharmaceutical scientist Professor Sanjay Garg, says a combination of increasing antibiotic resistance and the ineffectiveness of many topical drugs to penetrate hair follicles in acne sites means there is a pressing need to develop new antibacterial therapies that are effective and safe.

Narasin is commonly used for bacterial infections in livestock but has never been previously investigated as a viable treatment for acne.

Abid, Prof. Garg and researchers from UniSA, the University of Adelaide, and Aix-Marseille Université in France also investigated how well Narasin encased in nanoparticles penetrated various layers of skin, using pig's ear skin as a model.

"The micelle formulation was effective in delivering Narasin to acne targets sites, as opposed to the compound solution which failed to permeate through skin layers," Prof. Garg says.

More information: Fatima Abid et al, Nanotechnology and narasin: a powerful combination against acne, *Nanoscale* (2023). DOI: 10.1039/D3NR01789C

Provided by University of South Australia