

Creating textiles and cosmetics of the future with nanotechnology

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Credit: Michael Burrows from Pexels

By using nanocapsules, scientists and industrial partners are developing innovative garments and skin products that provide thermal comfort, and anti-aging and antimicrobial properties.

Wouldn't it be great if you could wear your favorite piece of clothing comfortably throughout summer and winter without worrying about the temperature? What if you could use a natural-based cream with anti-ageing properties that could both moisturize your [skin](#) and protect you from bacterial infections? Such innovative products are an ever closer reality thanks to the EU-funded SKHINCAPS project.

Project partners have tested the performance of the products they've developed to ensure safety and biocompatibility for end users. The demonstrated examples include garments with thermal management capability, creams with [antioxidant properties](#) and fabrics with antibacterial activity.

As noted in a news item posted on digital publication "Open Access Government," the project uses nanoencapsulation technology "to deliver [natural products](#) for skin healthcare applications, with increased efficiency and cost benefits." In the same news item, project coordinator Carla Silva, [chief technology officer](#) at the Centre for Nanotechnology and Smart Materials, explains the technology in detail: "For first layer and sports garments, in which the skin comfort is of great importance, no-release nanocapsules loaded with paraffin will allow thermal management in accordance with the temperature of the environment, certainly, textiles will feel warmer at low temperatures and cooler during the summer." According to differential scanning calorimetry analysis, the same effect is maintained even after several washing cycles.

Cocktail of antioxidants and vitamins

"Creams with triggered release nanocapsules that contain a cocktail of vitamins and antioxidants for anti-aging skincare were also developed, with proven antioxidant activity," the same news item adds. "To prevent and mitigate bacterial infections on the skin, lotions and textiles with targeted release nanocapsules, which are loaded with essential oils were

also developed." These fabrics continued demonstrating high antimicrobial activity after several washing cycles.

Scheduled to end in September 2019, the SKHINCAPS (SKin Healthcare by Innovative NanoCAPsuleS) project promises to transform the [textile](#) and cosmetic industries by developing functional products with incorporated biocompatible nanocapsules. One product example is first-layer garments with phase-change materials (PCMs). These fabrics have a thermal regulating function that keeps the wearers cool or retains their body heat.

Strong market potential

Project partners hope their fabrics with PCMs will be used in baby and elderly clothing, sports practice and home textiles. Other applications involve creams with an anti-aging effect, and lotions and textiles loaded with natural essential oils to prevent or even mitigate bacterial infections on the end user's skin. They also believe that these textiles will be non-oily, comfortable and safe for users, with real potential for strong market demand. They say the cosmetic products developed by SKHINCAPS will be natural and won't cause any side effects during antimicrobial treatment. The project team will be able to efficiently treat topical infections without leading to bacterial resistance.

More information: SKHINCAPS project website: skhincaps.eu/

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