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Biodegradable Nanoparticles for Safer, Broad-Spectrum Sunscreen Formulations

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This technology introduces biodegradable lignin-based polymeric nanoparticles combined with quercetin to create a broad-spectrum sunscreen formulation. Lignin provides effective UVB and UVC protection, while quercetin enhances UVA absorption, resulting in coverage across 250 to 400 nm. The formulation eliminates the need for synthetic chemical UV filters and surfactants, reducing potential health and environmental risks associated with conventional sunscreens. Designed as an ecofriendly alternative, the nanoparticles offer improved safety, reduced risk of systemic absorption, and versatility for use across a range of skincare products, including sun care and after-sun applications.

Advantages

- Broad-spectrum UV protection
- Biodegradable and ecofriendly
- No synthetic filters or surfactants

Commercial Uses

- Sunscreen for adults and babies
- After-sun skincare products
- Self-tanners and tanning lotions



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