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Biopigments in Textiles and Nanotechnology

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The textile world has started to revolutionize with the discovery of biopigments. Biopigments are a type of natural pigments, sourced from natural origins like plants and microorganisms. These pigments are valued for their eco-friendly, sustainable and biodegradable nature, along with their promising antimicrobial and antifungal properties. Traditional textile industries use chemical or synthetic dyes, which are toxic and carcinogenic. These biopigments not only have potential in dyeing and colouration, but also have applications in nanoparticle synthesis, particularly in the green synthesis of nanoparticles, especially silver nanoparticles. Techniques including FTIR, UV-vis, SEM, EDX and XRD are utilized for their characterization, along which, the study also investigates their antibacterial activity. This review focuses on the sources, extraction and characterization strategies, and dyeing application. Overall, this review emphasizes the sources, characteristics of different biopigments and their diverse properties and applications in both textile and biomedical nanotechnology.

Keywords: Antimicrobial, Biopigments, Green synthesis, Silver nanoparticle

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