

Development of biotechnology for sustainable wool processing

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Summary

There are increasing demands for textile materials to be sustainable and recyclable to reduce the sector's negative impacts on the environment. Enzyme-based biotechnologies were explored as an alternative solution to improve wool fibre performance and limit the impact of wool processing on the environment to reduce water and energy consumption, and effluent discharge.

Aims

- To explore the extraction of wool polypeptides from low value wool and post-manufacture waste wool.
- To graft extracted wool polypeptides back on to the surface of wool fibres to improve fibre performance.
- To develop a sustainable enzyme based process for wool coloration and finishing with improved shrink-resistance.

Outcomes

- A successful enzyme bioprocess was established for the extraction and application of wool polypeptides from waste wool feedstocks and post-manufacture waste wool.
- An innovative biotechnology was developed to both dye and graft extracted polypeptide onto wool fabrics using an enzyme-catalysed coloration method which negates the use of synthetic dyestuff.



“By enhancing the performance and functionality of wool fibres through innovation, we can unlock greater value of wool for a wide range of industries globally.”

Haldi Kranich-Wood,
British Wool