

Developed technology

A process for development of UV protective finish for cotton fabric using *Urtica Dioca* Microcapsules

UV radiation from the sun is causing various harmful effects on skin of human beings. Fabric have potential to protect against these harmful UV rays, however not all fabric can provide protection thus developed technology was aimed at developing UV protective finish for Khadi cotton fabric using renewable plant materials of local region of Uttarakhand. Leaves of *Urtica dioica plant (Nettle Plant)* was used for developing UV protective finish. *Urtica dioica* plant extracts was applied on the cotton fabric using microencapsulation method. Finishing conditions for application of plant extract were optimized using box and behnken design under design expert software version 10. Different optimized finishing condition was observed for each of the method of application. In case of microencapsulation method, Optimum concentration of microcapsules was observed as 4.117%. Concentration of binder was observed to be as 3%. Optimum curing temperature for application of *Urtica dioica* microcapsules was found to be 113.254° C. It can be concluded from the results that very good to excellent UV protection properties can be incorporated in khadi cotton fabric by using *Urtica dioica microcapsules (Figure1)*. Microencapsulation method was observed to be best with regard of UPF, tensile strength, lightness value as well as in providing maximum durability. Addition of UV protection property will not only provide protection against UV rays but also help to add value in khadi fabric which would increases the market for khadi cotton fabric. Excellent UV protection properties remained even after the 20 washes. The finished fabric also passed the anti-allergic patch testing.

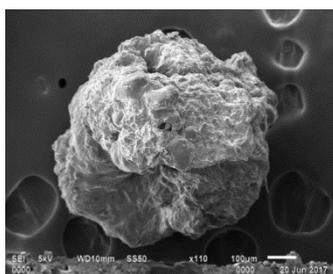


Figure1: Urtica Dioca Microcapsules

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(71)Name of Applicant :

1)G.B. PANT UNIVERSITY OF AGRICULTURE & TECHNOLOGY, PANTNAGAR

Address of Applicant :PANTNAGAR UTTARAKHAND-263145, INDIA Uttarakhand India

(72)Name of Inventor :

1)DEEPTI PARGAI

2)SHAHNAZ JAHAN

(57) Abstract :

UV protective Urtica dioica microcapsules. was developed and process parameters was also optimized for application of Urtica dioica microcapsules on cotton fabric. Excellent UV protection properties can be achieved in cotton fabric while maintaining other essential properties of the fabric by using Urtica dioica microcapsules. Excellent UV protection properties remained even after the 20 washes.the finished fabric also passed the anti-allergic patch testing.