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The investigation of effects of commercial protease and *Bacillus subtilis* 168 E6-5 protease on felting and dyeing behaviour of 100% wool fabric**Tuba Sevgi, Elif Demirkan, Dilek Kut and Meral Dogan**
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In this study, a novel bacterial strain with high protease activity (210 U/ml) was isolated from soil, and then identified by its morphological character and 16S rRNA sequence, and named *Bacillus subtilis* 168 E6-5. *Bacillus* protease enzyme and commercial protease enzyme were applied to 100% raw wool fabric and bleached wool fabric. After dyeing with acid dyes, changes in the size of the fabric and color yields were measured. Protease was purified by dialysis+lyophilization, and applied on dyed wool fabric and felting shrinkage values were measured. Enzyme treated and dyed wool fabric possess 8%, however non-treated wool fabric has 11% of felting shrinkage value just after dyeing step. After performing five repeated washing, the enzyme treated raw fabric has 12% and the non-treated raw fabric has 15%. After pre-washing, bleaching and dyeing steps, the felting shrinkage value of the enzyme treated wool fabric was 9%, while non-treated one was 11%. After the processes of pre-treatment, bleaching and dyeing the K/S value indicating the colour yield of the fabric was measured. The K/S value of the wool fabric that was treated with enzyme before the processes of pretreatment, bleaching and dyeing was 31.68, while the non-enzyme-treated wool fabric has 26.33. Enzyme application increased the colour yield. This study suggests that the *Bacillus* protease enzyme shows better results in behaviours of felting and dyeing than the commercial protease enzyme and applicable on wool fabrics. Therefore, this protease enzyme has potential in textile industry.

Biography

Tuba Sevgi has completed her MSc from Technical University of Kaiserslautern in Molecular Biotechnology and Systems Biology, Germany. Currently, she is doing her PhD in the Department of Biology, Faculty of Arts and Sciences, Uludag University. She is a Research Assistant in the Department of Biology, Faculty of Arts and Sciences, Uludag University.

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