Demonstration of cyclodextrin techniques in treatment of waste water in textile industry to recover and reuse textile dyes

Textile is one of the most pollutant industries and overall finishing sector which employs high quantities of water polluted with a variety of chemicals. DYSE4EVER’s main aim is the demonstration and validation of the ability of cyclodextrins (CDs) as encapsulation agents for dyes, eliminating them from waste water so they can be recovered and reused as raw material, as well as obtaining less contaminated waste water that can also be reused.

Cyclodextrins are molecules which are obtained by decomposition of starch and consist of glucose units that are stacked on top of each other in a conical shape forming a toroidal and rigid structure, and a hollow and hydrophobic cavity which can trap molecules mainly hydrophobic.

DYSE4EVER will demonstrate the encapsulation ability of CDs with the different dyes used in the textile industry in two aspects: On the one hand, in the reuse of recovered dyes in a rear dyeing process as the encapsulated dye will not be chemically-altered; and on the other, the elimination of the dye will result in a reduction of contaminated waste water and also avoid the need for adding more chemicals to clean the water. Finally, eliminating dye from waste water means that it can be reused in other dyeing processes, lengthening its life cycle and reducing the quantity of contaminated waste water.

A semi-industrial scale pilot plant which demonstrates the feasibility of the techniques developed in the project will be set up in facilities of the Spanish company COLORPRINT Fashion SL to recover CDs and dyes in waste water resulting from dyeing. This process is relatively complex due to the variety of dyes used to obtain the range of colors demanded by the fashion, and because of their specific requirements according to the textile substrate used.

The consortium responsible for the project is comprised by: AITEX (Textile Research Institute), UCAM (Catholic University San Antonio) and COLORPRINT Fashion SL from Spain and, UNIBARI (University of Bari Aldo Moro) from Italy. The project is co-funded by Life + European programme within Priority Environment Policy & Governance.

For further information please visit: www.dyes4ever.eu