

DYEING OF TEXTILES AND ANALYSIS OF RED DYES USING DIFFERENT INSTRUMENTAL METHODS

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Natural dye sources can contain many different organic molecules that give strong colour in small amounts. Dye molecules can be divided into groups like anthraquinones, flavonoids, tannins etc. For dyeing textiles, there are many general methodologies, but usually every dye source requires individual approach. There are three main techniques for dyeing: direct, mordant and vat dyeing. Using the right approach for dyeing, it is possible to obtain lasting colours. Besides that, knowing the dyeing technique, right methods can be used to dissolve dyes from textiles that are analysed. Identification of textile dyes is in turn important for conservators, archaeologists and historians to obtain information about the item and to use right materials and methods for conservation.

In experimental part of the work, sheep wool yarn was coloured using different natural sources of red dyes. Used dye sources were dyer's madder, safflower, alkanet, sandalwood, kermes, cochineal, blood red redcap and brazilwood extract. Direct dyeing method was used in all cases and individual temperature, solvent and time parameters were found for each dye source. All the solutions from colouring stages were analysed using different chromatographic and mass-spectrometric methods (HPLC-MS etc). Additionally, dyed textile samples were analysed with SEM-EDS to identify inorganic mordants.

As a result of this work, individual dyeing methods were developed for different red dyes and components were identified from natural dye sources.



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