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Natural Dyes

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ABSTRACT
The dyes were extracted, using simple and environment friendly methods, from agroindustrial waste and selected native species. The dyeing properties were evaluated regarding the yield of the process and the colorfastness of the dyed fabrics. Until today more than twenty powder colorants were obtained from vegetal materials with a responsible management of wild natural resources. All of them were used to dye woven fabric made of pure wool without the use of common mordants.
Also the colorants were used for printing cotton fabrics.

Introduction

Textile materials without colorants cannot be imagined and dyeing has been widely used since ancient times. Ecological and sustainable production methods are very important nowadays. In this work both, the extraction of colorants and the process of dyeing were studied taking into account these aspects.

The colorants obtained in the laboratory were then obtained at a pilot plant scale (1:50). The necessary changes in methods were evaluated in the textile laboratory. It was possible to close the complete cycle: available raw material, satisfactory extraction of colorants and good performance in dyeing and printing.

For textile dyeing the most promising colorants come from: peanut, onion, walnut, yerba mate and urunday, vegetal species extensively distributed in Argentina.

Natural colorants were also used to print cotton with good results.

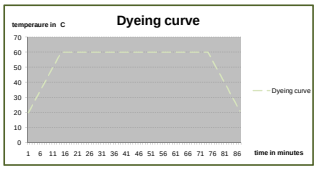
urunday walnut onion yerba mate peanut

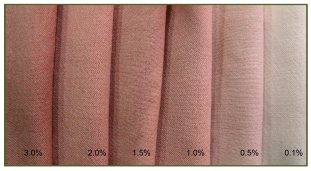
Different natural dyes at 3% concentration on wool

Cotton printed with urunday, onion and yerba mate

Results and Conclusions

Some results are shown in the following figures.





Dyeing with peanut colorants at different concentrations

Dyeing was carried out in a laboratory equipment (Labomat Mathis) in the following conditions:
pH 4.5 (acetic acid)

R.B	temperature	gradient	time
1:10	100 ºC	3 ºC/ min	60 min

Dyeing was tested at different concentrations of colorant, being possible determine that concentrations higher than 3% don`t increase the intensity of color.

According to results of dyeing it is possible to infer that an important number of the colorants obtained are suitable for protean fibers, with good or very good colourfastness to washing. It is important to emphasize that it was possible using a simple process with no mordants.