

**IN SEARCH OF "LOST YELLOWS": IDENTIFICATION AND OCCURRENCE OF ANCIENT
POLYPHENOL YELLOWS IN PORTUGUESE PLANTS, PART II**

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Abstract (max 500 words including references)

Yellow dye plant sources were systematically studied in the past ten years where works, delivering full molecular fingerprints, provided further support for the hypothesis that yellow dyes are more regional than reds or indigo blues [1-4]. We intend to cross Portuguese national territory in the quest for plants which could have been sources for yellow dyes. To assess their use, we intend to create a database of reconstructions which will allow us to develop further methods and techniques that will allow for the identification of these "lost yellows" in medieval manuscripts and textiles.

Coordinated by an expert in botany, a selection of nine plants, according to their possible use as raw materials for yellow dyes [5], were collected in botanical field expeditions in Portugal. When a particular plant is not native to Portugal, such as *Anthemis tinctoria*, the species from the same family were also collected. The collection of the plants in field expeditions is of particular importance to guaranty that plant collection occurs during the appropriate phenological stage (e.g. flowering). A herbarium voucher was collected for each species, and stored at the LISU Herbarium, University of Lisbon.

The raw materials were extracted, fresh or naturally dried, and characterized by HPLC-DAD-HRMS to obtain a full profiling and identify signature markers. These data was compared with previous studies, such as for the case of *Reseda luteola*, where the glycosides of luteolin, known specific markers of the species, were found. The plants were then used to dye textiles, specifically wool broadcloth, according to a recipe selected by Dominique Cardon, based on compiling 18th century broadcloth dyers' recipes for yellows and greens.

A discussion on the dyeing procedure and materials, as well as a full characterization of the plant extracts compared with the dyed textiles, will allow for a better comprehension of these yellow dyes and ascertain their use as a possible source for yellows in Portugal.

Finally, the dyed textiles were preliminarily analyzed by microspectrofluorimetry, to set the foundations in which a database of reconstructions of yellow dyes will be built and analyzed through a methodology already developed and validated for identification of red lake pigments [6].



Figure 1. *Genista tournefortii*, from right to left: collected in field expeditions; parts of the plant used (flowering branches); and broadcloth dyed with the extract from the plant.

References: (reference citations in the text should be identified by numbers in square brackets)

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