



# LIFE12 ENV/IT/000352 "BIONAD" Naturalised dyes replacing commercial colorants for environmentally friendly leather dyeing and water recycle



## Action B.3 of the project. Synthesis of naturalized dyes

Beneficiary responsible for implementation

UNIFI

### Duration

01.01.2014 to 30.06.2016

### Total Budget

€ 1,469,056.00

### EU contribution

€ 725,713,00

The naturalized dyes are water soluble compounds, resulting from the merger of a chromophore and a suitable derivative of the natural sugar lactose. They are metal free colorants and possess the ability to dye leather, according to the traditional dyeing methods. Naturalized dyes are unique compounds with own chemical features and they do not need any additive in the dyeing process. The synthetic process is compatible with REACH (regulation EC 1907/2006) and they have been synthesized both on lab and kilo scale. The analytical techniques used to monitor the production processes were Nuclear Magnetic Resonance (NMR), Mass Spectrometry and Visible Spectroscopy.

### Coordinating beneficiary



Chemical Institute of organometallic compounds of CNR (IT)

### Analytical instruments

Nuclear Magnetic Resonance



Mass Spectrometry



Visible Spectroscopy



### Associated beneficiaries



Chemical Department "Ugo Schiff" Florence University (IT)



Serichim Srl (IT)



Asociación de Investigación para la industria del calzado (ES)

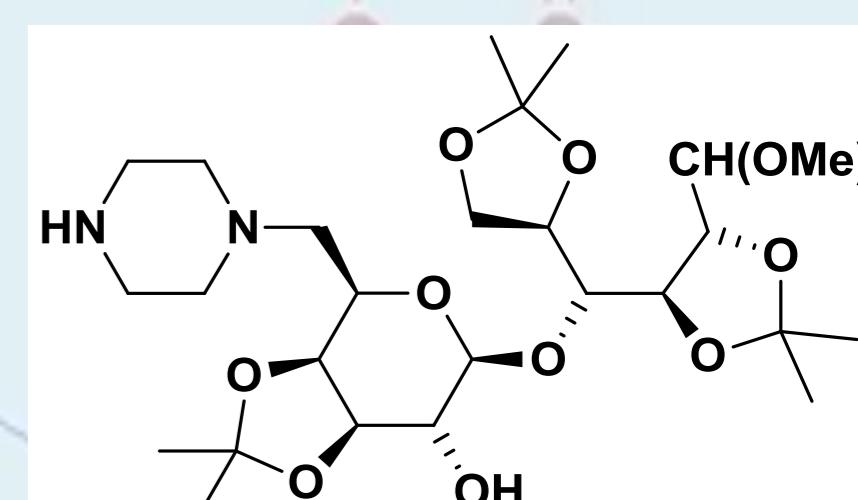
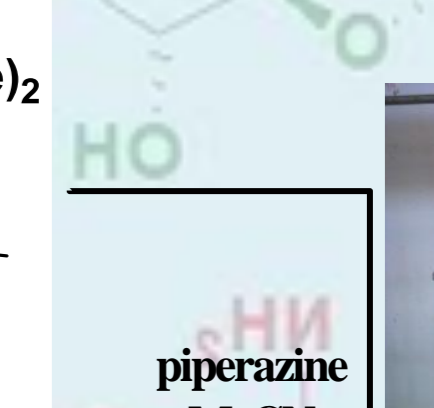
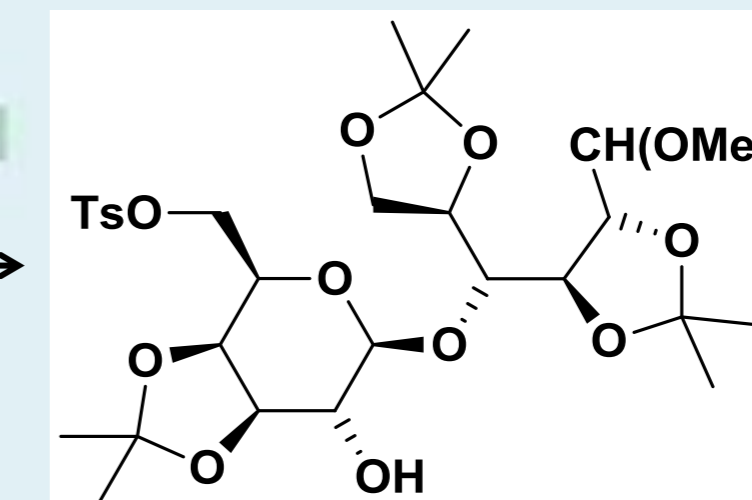
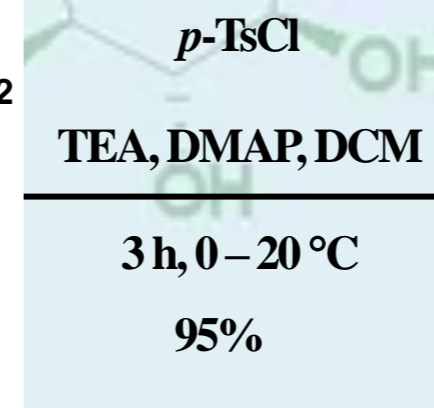
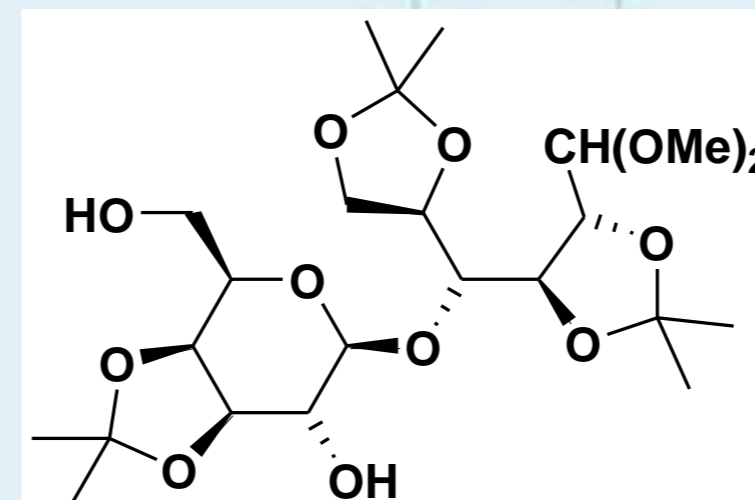
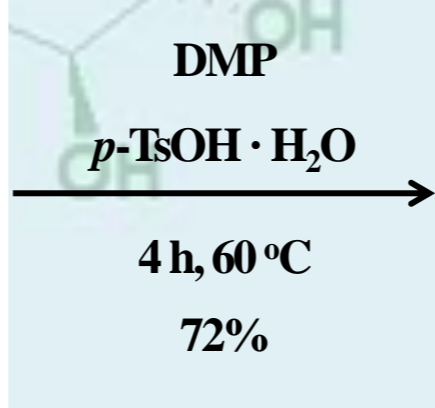
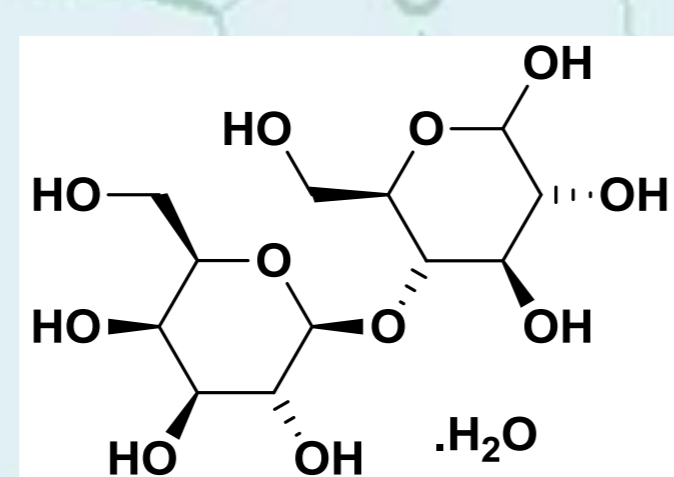


Biokimica Group (IT)

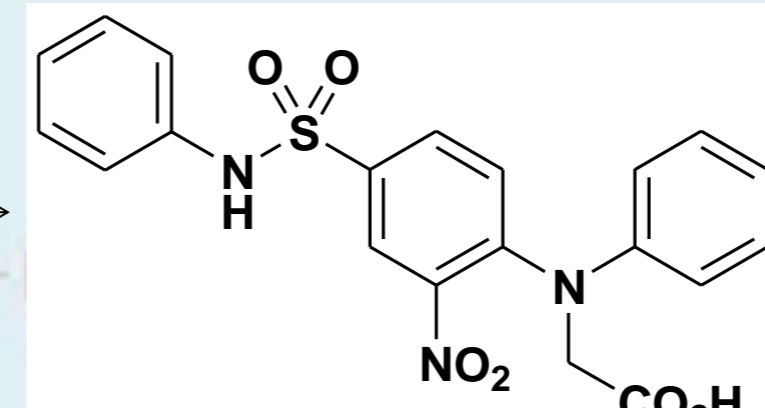
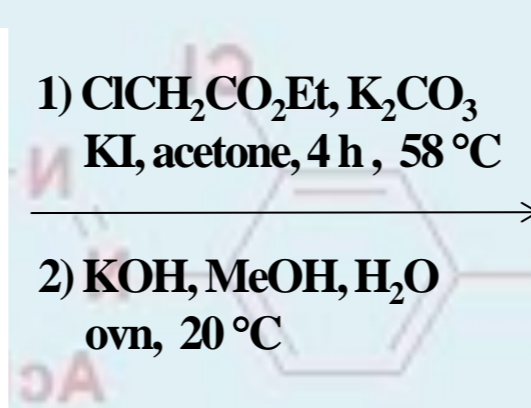
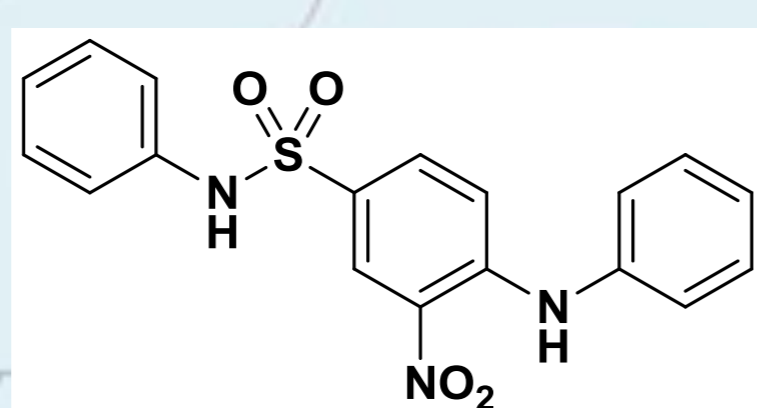
### Contact person

Prof. Roberto Bianchini  
Department of Chemistry  
The University of Florence (IT)  
roberto.bianchini@unifi.it

### Elaboration of lactose



### Elaboration of a chromophore



### Coupling and deprotection

