

MYCOPIGMENTS FOR A SUSTAINABLE TEXTILE INDUSTRY

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The textile industry represents a very important economic sector in several countries, being also associated to a high environmental impact, caused by the production and use of hazardous compounds and synthetic dyes. Therefore, the demand for natural, harmless as well as sustainable dyes and pigments has been increasing tremendously across the world. Mycopigments are produced by fungi and have emerged worldwide as promising alternatives to synthetic pigments due to their higher safety level and wide range of applications. The extraction of mycopigments from macrofungi such as *Pisolithus tinctorius* has been performed since ancient times, but its use for fabric dyeing is mostly reduced to artisanal initiatives. These fungi are normally obtained from nature, under variable growth conditions and with an unpredictable availability. To increase the amount of these natural pigments in the market it is necessary to grow fungi and to extract the mycopigments under optimized and controlled conditions, possible to reproduce at industrial settings. The main objective of our work was to compare the characteristics of mycopigments obtained from *Pisolithus tinctorius* grown in nature and under laboratorial conditions, and to understand how controlled growth conditions can influence the mycopigments production. Main results indicate that the growth conditions can affect the type of pigments that are produced, consequently affecting the physical-chemical interaction of the pigments with the natural fibers used in the textile industry. Our future goal is to be able to produce mycopigments in bioreactors and to obtain value from the exceeding mycelia. For the case of *Pisolithus tinctorius*, commonly used as soil fertilizer, the mycelia can be used for increasing the survival rate of trees produced in nurseries, after transplantation. To invest in mycopigments production can represent a giant step towards an increased sustainability of the textile sector, while creating a new market opportunity.