

The optimization of waxes yields extracted from tunisian *Agave Americana* L. and esparto leaves

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Vegetable waxes are considered as long-chain lipids of alcohols and fatty acids esters. Synthetic and petroleum waxes are more widely used compared to natural waxes. The reason is that the majority of natural waxes are unidentified. The higher length of these lipids chains, that can reach C50, causes the hydrophobicity of these waxes. Because of their hydrophobicity, waxes form a good moisture barrier. This property explains why waxes are largely used as edible films, as barrier color for cloth dyeing, as water retardant for fiber boards and for waterproofing of wood.

In Tunisia, esparto and *Agave americana* L. are abundant. Thus, these two plants are frequently used for textile researches. In this study, waxes from esparto and *Agave americana* L. leaves were extracted with two solvents: petroleum ether and ethanol using the soxhlet. The impact of moisture of esparto and *Agave americana* L leaves on the waxes yields were mentioned for each solvent in order to be optimized.

Esparto moisture, equal to 9.5%, represented a critical point for esparto wax extraction with petroleum ether. At this esparto moisture the maximum wax yield (6.06%) was extracted. Also, *Agave americana* L. (AAL) moisture equal to 83% represented a threshold for AAL wax extraction with ethanol. At this moisture value of AAL, the optimum wax yield was extracted and it was equal to 3.63%. So, Esparto leaves hold in double wax yield than AAL.

Finally, the choice of the organic solvent for wax extraction depends, not only, on the affinity of this solvent to wax, but also, on the moisture content of the plant material used according to the polarity and the solubility of this solvent in water.

Keywords: Vegetables waxes, esparto wax, AAL wax, extraction wax, solvent extraction, moisture, wax yield, ethanol and petroleum ether.

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