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Chemical Composition of *Tamarix* and Almond Fibers

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Submission: March 03, 2018; **Published:** June 06, 2018

Abstract

In this work, we investigated the chemical composition of two lignocellulosic materials, largely available in Tunisia, as a source of two cellulosic fibres, namely: *tamarix* and almond.

Chemical Composition

Table 1 presents the chemical composition of several cellulosic materials such as wood, non-wood plants; these data have been obtained from the literature. When compared with data for grapevine stalks or vine shoots, cellulose and holocellulose contents are relatively close [1]. The comparison with other wood and non-wood species confirms that the amounts of extractives in the vine stems are high. According to structural components, this tow plants are characterized by relatively low cellulose content and high amounts of lignin, whereas the content in holocellulose is quite comparable. Finally, the ash content was found to be around 4%, which is much higher than that of wood and in the same range than that of non-wood plants. *Tamarix* is characterized by a higher amount of asch than almond, which is due to his botanical original [2].

Table 1: Chemical composition of some plants.

	Ash	Lignin	Holocell	Cellulose
Tamarix (this work)	10.7	16.2	22.2	-
Almond (this work)	1.58	19.2	20.7	-
Vine stems	3.9	28.1	65.4	35
Amaranth	12	13.2	58.4	32
Posidonia oceanica	12	29.8	61.8	40
Eucalyptus globulus	0.6	19.9	80.5	53
Olive trimmings	1	18.9	64.7	59
Pinus pinaster	0.5	26.2	69.6	56
Cynara Cardunculus L	6.7	25.4	72.8	40.5
Chamaecytisus proliferus	2.3	16.8	79.7	45.4
Jerusalem artichoke	2	14.7	51.6	29
Sorghum stalks	4.8	13.4	71.7	42
Date palm rachis	5	27.2	74.8	45
Vine shoots	3.5	20.3	67.1	41.1
Grape vine stalks	3.9	39.6	60	36

In conclusion, the Tunisian *Tamarix* and Almond are characterized by low amounts of extractives, lignin, and relatively high cellulose content. Thanks to the acceptable amount of holocellulose, this biomass could be viewed as a potential source of cellulose for the production of cellulose derivatives, and of lignocellulosic fibres for fibre-reinforced composite materials or papermaking applications [3].

References

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