

The Value Chain of Aleppo Pine Seeds and the Value Added of Vegetable Oil Extracted from Seeds



Aleppo pine seeds



Vegetable oil extracted from Aleppo pine seeds

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Keywords

Aleppo pine

Vegetable oil

Fixed oil

Aleppo pine seeds

Variability

wild harvested

forest nuts

NWFP

Wild Nuts & Berries

Scale

National

Context

Different research work has been carried out on:

- Supply chain from the harvesting operation to the treatment of cones and seeds;
- Evaluate the yield of vegetable oil obtained by pressing from several geographical origin of seeds;
- Study the physico-chemical characteristics of the oil extracted;
- Study the possibility of transformation of the residue obtained after the oil extraction and its food valorization.

Objective

Aleppo pine seeds (commonly called *Zgougou*) derive all their originality and nobility from the fact that they are consumed by Tunisians as part of their cooking habits. *Zgougou* is considered one of the most interesting NWFP due to socio-economic role and commercial value. Aleppo pine seed oil can be extracted as for nutrition, or for medicinal and cosmetic uses.

The present work studies the conditions of exploitation of seeds in the forest, the yield of vegetable oil extracted, its physicochemical qualities and the possibilities of valorizing the press cake obtained after the oil extraction.

Results

Aleppo pine seeds have a high content of vegetable oil. Extracted mechanically by the press, its yield is around 15 (varying by geographical origin (10% -17%)). The quality of vegetable oil is defined by its organoleptic, physical, chemical, and sensory characteristics. Zgougou oil has a delicate odor, pleasant and sweet aroma, light yellow color, light texture and penetrates easily into the skin. All the physical characteristics of zgougou oil (acid number, peroxide value, specific extinction coefficient K232) comply with national and international standards. It has a high content (90%) of unsaturated fatty acids: 63% linoleic, 15% linolenic, and 12% oleic acid.

Recommendations

The typical pleasant taste of zgougou is well preserved in the cake based on defatted paste, allowing hence valorization of the residue from oil extraction establishing a specific value chain of Aleppo pine seeds. It is highly recommended to extract first oil from seeds and then transform defatted paste in food industry, allowing for better profitability. Indeed, the added value of such transformations is much more advantageous compared to seeds sold raw.

Impacts and weaknesses

The Zgougou value chain (VC) begins with the exploitation of forest resources. The extent of the Aleppo pine forests on the one hand and the massive and sustained seed production on the other hand offer definite advantages for the sustainability of the VC and further growth. The exploitation and marketing chain suffers from some weaknesses, such as:

- Illegal harvesting of seeds in the forest
- An unorganized market that is beyond the control of the state
- The speculation
- The presence of parallel circuit that disrupts the market

With often poor quality of seeds because of improper storage ...

Future developments

Various methods such as roasting or irradiation can improve the shelf life and organoleptic quality of the seeds. The improvement of seed storage conditions is a great advantage as it ensures better supply during off-peak periods. New products, in the form of dough or powder, enter the market, which their consumption is increasing during the whole year. The extraction of the oil provides an added value compared to the raw seed. The preparation of a cake based on a defatted paste is a good example of valorization of this residue and the product obtained is highly appreciated and can be widely marketed.



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Further information

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Organisation INRGREF		
Country and region Tunisia, Cap Bon		

About INCREDIBLE Project

INCREDIBLE project aims to show how Non-Wood Forest Products (NWFP) can play an important role in supporting sustainable forest management and rural development, by creating networks to share and exchange knowledge and expertise. 'Innovation Networks of Cork, Resins and Edibles in the Mediterranean basin' (INCREDIBLE) promotes cross-sectoral collaboration and innovation to highlight the value and potential of NWFPs in the region.



Funding

'Innovation Networks of Cork, Resins and Edibles in the Mediterranean basin' (INCREDIBLE) project receives funding from the European Commission's Horizon 2020 programme under grant agreement N° 774632.
