

HISTORY OF ARGAN OIL PRODUCTION

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Introduction. *Argania spinosa* (L.) Skeels (syn. *Argania sideroxylon* Roem. & Schult., *Elearandron argan* Retz., *Sideroxylon spinosum* L.) is a xerophilous and endemic species and the only representative species of the tropical *Sapotaceae* family in Morocco. It is widely distributed from sea level up to 1300-1500 m a.s.l., and forms particularly well-developed woodlands on the Essaouira and Souss plains near the Atlantic coast, and rather open vegetation in the Anti-Atlas and the High Atlas area. A palynological marine sediment core taken off the shore of Agadir at Cape Ghir showed that all the woodlands observed in these areas today result from a long history of agropastoral activities in which the Argan tree played a major role [1].

Excavations have been carried out at Îgîlîz for the past ten years and are part of a French-Moroccan cooperation research program directed by Ettahiri A. S., A. Fili and J.-P. Van Staëvel. The program examines the evolution of the population of the Souss Valley and the Atlas foothills during the Middle Ages and pre-Modern times. This was accompanied by an archaeobotanical approach from the beginning of the excavations, revealing the first and oldest Argan remains in Morocco, resulting from the daily activities of past populations [2]. This region provided us with the opportunity to observe some interesting techniques still practiced in the neighbouring village of Tifigit, located at 1280 m a.s.l. on the slope opposite the archaeological site. There, inhabitants still use non-mechanized techniques for some of their economic daily activities: crop farming, Argan oil extraction, foddering, fuel and building.

The aim of the study. Study the history of the formation of Argan oil production.

Methods of research. Literature on the history and technology of Argan oil was used.

Main results. Argan oil is frequently said to have been used by the Phoenicians settled along the North African Coast, at the dawn of the first millennium BCE. Consequently, it is difficult to simultaneously comprehensively and briefly summarized Argan oil global history. Therefore, we will mainly concentrate on the modern-time Argan oil history that is currently considered to have begun with the first report of the description of the chemical composition of Argan oil in the early 1970s [3]. In this early paper, Argan oil was depicted as a valuable South-Western Moroccan food, unsaturated fatty acid-, stigmasterol-, and tocopherol-rich, and exclusively prepared on a family-scale for a household use. Indeed, as difficult as it may seem to believe, even in the 1970s, Argan oil was virtually not known in Northern Morocco, not to say out of Morocco. It was actually almost exclusively known in a triangular part of Morocco, located South of the High Atlas and North of the Anti Atlas. This area that slightly surpasses a large western-part of the Souss Massa administrative region has as major cities Agadir, Essaouira, and Tiznit on its West seaboard, and Taroudant on its East side. Such a geographically-limited fame was the direct result of the natural very limited Argan tree distribution, the tree from the fruit of which Argan oil is prepared, and also from the limited preservation ability of Argan oil that, at that time, prohibited its large distribution.

Argan oil is a copper-colored edible oil which presents a slight hazelnut taste and nutty flavor. It is prepared for the roasted kernels of *Argani aspinosa* fruit. Whereas traditional Argan oil was almost exclusively intended for culinary purposes, its hair- and skin-protective properties were known in folk medicine. Argan oil is the main lipid source of the Amazigh diet [4], it is traditionally prepared by women. Argan oil preparation is a tedious seven-step (fruit picking, fruit peeling, nut cracking, kernel roasting, kernel grinding, dough malaxing, and oil collection) process whose efficiency is low. From 100 kg of dried fruit, only 2-2.5 L of oil can be obtained after 58 h of work for an isolated woman. One of the first major achievements of the AOP was to rapidly permit an increase of the process efficiency by mechanization of the oil collection step, and to a lesser extent of the roasting step. Indeed, replacement of the hand-made dough kneading step by endless screws, was without doubt an important milestone that reduces the hassle of the extraction process and allowed to collect 3 L of oil from 100 kg of dried fruit after only 30 h of isolated woman work. Use of endless screws also permitted to eliminate the introduction of water in the process.

It also allowed the production of an oil of high, standardized, and reproducible quality. A full technical description of the early Argan oil preparative process and of its successive improvements can be found in the literature. As an ultimate consequence, this improved process paved the way to design and build small production units, independent but unit in a large global structure, and all placed under the responsibility of women. Highly importantly, it could also be rapidly demonstrated that introduction of mechanization in the Argan oil preparative process had no negative impact on Argan oil physicochemical properties [5]. This precious finding had two impacts: first, Argan oil could join olive oil as a prized member of the “cold press oil privilege club” and, second, it could be assessed that the new technology preserved all the known benefits of the traditionally prepared Argan oil. Nowadays, Argan oil is still prepared following the mechanized process even though in some places highly efficient hydraulic presses have replaced endless crews. Note worthily, the cosmetic industry frequently adds a physical refining step to remove residual gums and phospholipids and for deodorization purposes.

Conclusions. The Argan oil project needed 20 years to be implemented. Even though its undeniable success makes the project a frequently used example to illustrate the way to follow in developing countries to increase the value of their natural resources, it must be kept in mind that the price of this success was a daily struggle over many years to convince all the participants and challenge to solve all kind of problems requiring scientific, but more often, psychological and economic knowledge.

References

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