

## Proposing new packaging for Aromatic and Medicinal Plants (AMP) products

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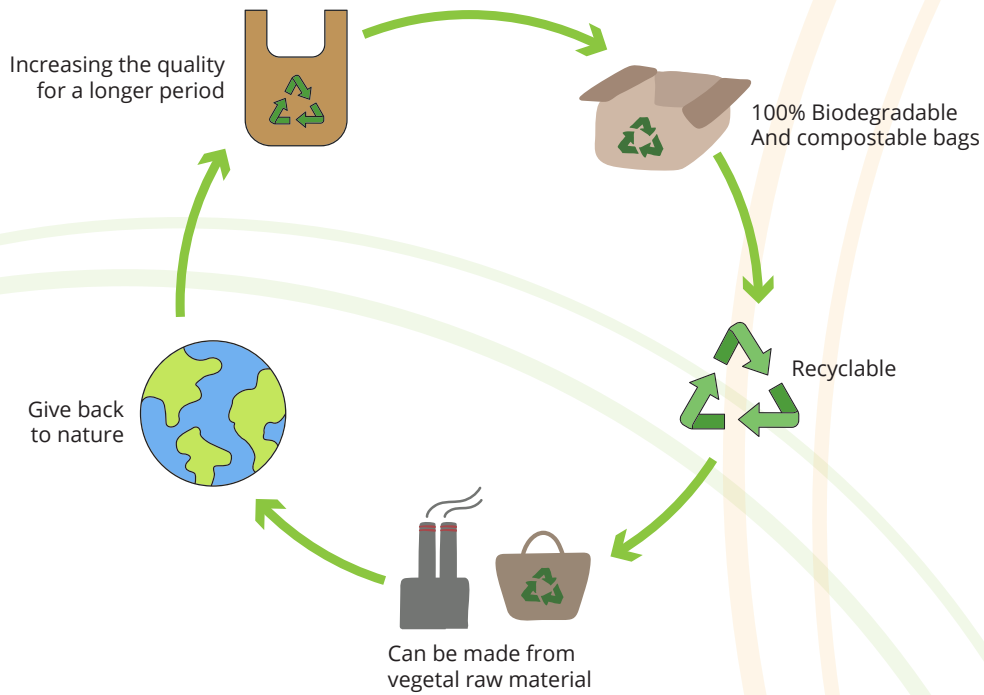
### Context:

For a long time, aromatic and medicinal plants (AMP) were adopted in food for their claimed health properties (Vankar and Shukla, 2019) and organoleptic qualities. They are often used in several forms: fresh, dry, dried and crushed or frozen. The key step for an optimal conservation of the product is the drying of leaves or flowers, carried out shortly after the harvest in order to stabilize the plant for a better conservation. Rules of hygiene imposed for the food safety also involve product debacterizing (Rushing, 2006) and storage in specific packaging and places. Production of AMP products requires specific equipment for raw material processing between collection and marketing, such as drying facilities, threshing (separation of stems from the leaf), screening (cleaning and calibration), decontamination, and finally packaging of the final product. Presently, the AMP chain is not structured but a few common interest groups, mainly, producers are individually involved in the first part of the operations (harvesting, drying, and threshing); then semi-finished products are transferred to other groups that have to gather, package and put them on the market to make them available to customers and consumers. For this study, we set up a pilot project in the Milia region, situated in Jijel province, Algeria, exactly at NABATIA's operating unit. Activities in this pilot project are expected to give some innovative solutions to improve quality of herbal AMP products that will be proposed for different users. We will develop mainly conditioning and packaging systems for three species selected in the framework of the WildFood project: Myrtle, Rosemary and Lentisk.

### Objective:

The objective is to guarantee medium and long term preservation of AMP products, adapted to different customers: large volumes for the industries and small volumes for private individuals in particular. The dried plant material in bulk is generally conditioned in bales, whereas those cut or reduced to powders are put in bags or barrels. As a full-fledged storage stage, packaging must be carried out with care to avoid product degradation and possible pest attacks (El-aziz, 2015). Within the framework of the pilot project, reflections will be carried out to:

- Explore new types of biodegradable packaging (Kraft paper and/or other materials) in order to maintain the characteristics of the product during the shelf life for the three AMP target species (Figure 1).



**Figure 1:** Life cycle of paper and its use

- Maintain the product in favourable sanitary conditions (Figures 3 & 4).



**Figure 2.** Wild products in the pilote site: **A.** Draying method of lentisk in Nabatia's unit, **B.** Myrtle at the flowering stage.

First, in the Nabatia operating unit where the processing (drying, grinding, storage of AMP) is done (Figures 2 & 4), we will install humidity and temperature sensors to provide the processor with a dashboard as a decision support tool to take the necessary measures for a better conservation and storage. In brief, we propose methods to monitor storage conditions in situ.



**Figure 3.** Dried Myrtle conservation before processing.

Secondly, we will test some packaging samples (long-term storage conditions) and then, we will send these samples to the laboratory for analysis in order to verify the capacity of the packaging to keep the organoleptic characteristics of the WFP (Figure 3).



**Figure 4.** Storage facility: Packaging in compressed bales.

## Expected Results:

We expect to monitor the quality of WFP by using adapted packaging and maintaining better conditions of storage. Offer excellent WFP to users in perspective of accessing international markets by certified products in term of quality and sanitary condition.

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