

Contribution to the Research of a Natural Galactagogue in the Algerian Aures Region

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Abstract –

Insofar as low milk secretion is one of the main reasons for the unprofitability of dairy cattle farming, it would be interesting to look for natural products that could remedy the problem. Our work was based on an ethnobotanical survey, set up between April and September 2018, carried out in the Aures region in eastern Algeria aimed at collecting the testimonies of herbalists. The object of this investigation is to answer various questions concerning the plants used as stimulators of milk production, their types of growth, their states in nature, their fields of use, their states of use, their used parts, their methods of preparation and their ways of administration. The counting of the questionnaire concerned 115 usable answers where 22 different plants were quoted by the herbalists. The descriptive statistics of SPSS software showed us that Fenugreek (*Trigonella foenum-graecum*) and dates (*Phoenix dactylifera*) were the most cited (24.3% and 21.7%, respectively); the type of growth "Herb" is the most frequent (75.7%), 94.8% of the plants are cultivated, they are used more in the food and health field (49.6%), in a dried form (59.3%); the most used part of the plant is the seed (67.8%) followed by the fruit (26.1%); the method of preparation "Infusion" is dominant (36.5%) after the choice "other" where the respondent presented a multitude of ways of using these plants, finally, the oral way is the most frequent way of administration (99.1%). This work deserves to be continued by studying the administration of Fenugreek seeds in the diet of lactating cows.

Keywords: Ethnobotanical survey, Plants, Milk production, Stimulators

Introduction

In Algeria, the import bill is 46.72 billion US dollars where the group of food goods takes 17.6% (National Center for Informatics and Statistics, 2016). Despite all the efforts made in the dairy sector to meet domestic demand, Algeria remains a major importer of milk powder, with 7 to 10% of world imports (OECD/FAO, 2016). Indeed, the causes of this dependence on the international market can expand and go beyond the strategies put in place by the state, the climate changes, the unavailability of agricultural lands but also at the level of consumption of the Algerian citizen, ranked first at the Maghreb level with (115 L / year) (Meribai et al, 2016) if we compare it to its Moroccan neighbor with (70 L / year) (Benkirane, 2017); in addition, the low bovine milk secretion is one of the main flaws in the sector, from which the idea of this work emerged, which can be summed up in the search for a natural galactagogue that can boost milk production. The aim of this work is to discover and identify the plants used as stimulators of milk production in women (type of growth, state in nature and areas of use) and define their mode of use (parts used, methods of preparation and ways of administration) using the questionnaire sheets.

Materials and methods

Using 115 questionnaires, an ethnobotanical survey was conducted between April and September 2018 among herbalists across the Aures region in eastern Algeria. The tool of our investigation is a form made up of 08 questions, aiming to discover and identify the plants used as stimulators of milk production in women (type of growth, state in nature, fields of use) and define their mode of use (parts used, methods of preparation and ways of administration). Information is obtained by asking direct questions on herbalists in the region concerned. The data collected were coded and recorded in a database with Excel software and analyzed with SPSS version 25 software.

Results

The survey revealed a multitude of results on the nature and the use of medicinal plants, the examination of the questionnaire concerned 115 exploitable answers, the descriptive statistics of the SPSS software allowed us to describe them in the following points:

- There is a higher male participation of around 96%, the most frequent age of which is between 40 -50 years old with a percentage of 48%.
- About twenty plants were mentioned by the respondents (Table 01). The most represented families are Fabaceae (31.3%), Arecaceae (21.7%), Apiaceae (19.2%) and Poaceae (10.5%).

Table 01: Plants that stimulate milk production
cited by the herbalists.

Species	Family	Scientific name	Common name	Citation frequency
Fenugreek	<i>Fabaceae</i>	Trigonella foenum-graecum	Halba	28
Date	<i>Arecaceae</i>	Phoenix dactylifera	Tmar	25
Fennel	<i>Apiaceae</i>	Foeniculum vulgare	Bessbess	13
Green Anise	<i>Apiaceae</i>	Pimpinella anisum	Habat Hlawwa	08
Candle millet	<i>Poaceae</i>	Pennisetum glaucum	Bechna	08
Sesame	<i>Pedaliaceae</i>	Sesamum indicum	Jenjlen	07
Chickpea	<i>Fabaceae</i>	Cicer arietinum	Homos	04
Wheat	<i>Poaceae</i>	Triticum	Ghemh	03
Chaste tree	<i>Verbenaceae</i>	Vitex agnus-castus	Kaf meriem	02
Yellow nutsedge	<i>Cyperaceae</i>	Cyperus esculentus	Hab Al Aziz	02
Cultivated lentil	<i>Fabaceae</i>	Lens culinaris	Aadass	02
Nigella	<i>Ranunculaceae</i>	Nigella sativa	Habba Souda	02
Marjoram	<i>Lamiaceae</i>	Origanum majorana	Bardakouch	02
Lemon verbena	<i>Verbenaceae</i>	Verbena triphylla	Tizana	01
rocket	<i>Brassicaceae</i>	Eruca vesicaria ssp. sativa	Jarjir	01
Carob	<i>Fabaceae</i>	Ceratonia siliqua	Kharoub	01
Barley	<i>Poaceae</i>	Hordeum vulgare	Chaiir	01
Garden cress	<i>Brassicaceae</i>	Lepidium sativum	Hab Rchad	01
Chamomile	<i>Asteraceae</i>	Chamaemelum nobile	Babounj	01

Beet	<i>Amaranthaceae</i>	Beta vulgaris subsp. Betrave	01
		vulgaris	
Bean	<i>Fabaceae</i>	Vicia faba	Foul 01
Cumin	<i>Apiaceae</i>	Cuminum	Kamoun 01

- Several organs of these plants are used (Figure 1). These are: the seed (67.8%), the fruit (26.1%), the leaf (5.2%) and the flower (0.9%).

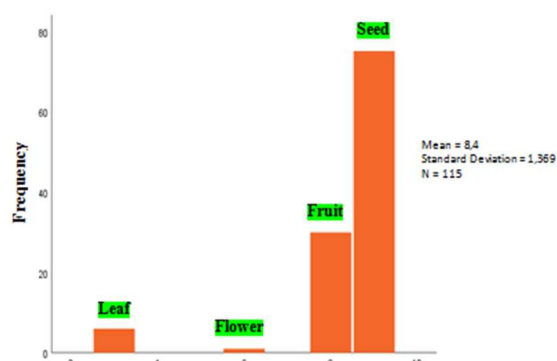


Figure 01: Used parts of the plants cited by the herbalists.

- Most plants, including fenugreek, green anise, fennel, nigella, garden cress, sesame, candle millet, cumin, chickpea, wheat, barley and cultivated lentil are used for their seeds. On the other hand, date, yellow nutsedge, carob, beet and bean their used part is the fruit, while the leaf is the used part of chaste tree, lemon verbena, rocket and marjoram.

- The method of preparation varies from one respondent to another according to their experience. In addition to plants, some methods of preparation contain yoghurt or honey (other).

The surveyed herbalists cited several methods of preparation, detailed in (Table 02). We identified maceration (0.9%), decoction (1.7%), infusion (36.5%), other (53.9%), infusion and other (4.3%), decoction and other (1.7%) and finally maceration, decoction and other (0.9%).

Table 02: Methods of preparation listed
among the herbalists.

Species	Used Parts	Methods of preparation
Fenugreek	Seed	Powder + (honey or yogurt) Infusion
Date	Fruit	whole fruit , Powder
Fennel	Seed	Infusion
Green Anise	Seed	Infusion
Candle millet	Seed	Powder+yogurt
Sesame	Seed	Powder+ honey
Chickpea	Seed	Powder+ honey
Wheat	Seed	Powder+ honey
Chaste tree	Leaf	Infusion
Yellow nutsedge	Fruit	whole fruit
Cultivated lentil	Seed	Decoction
Nigella	Seed	Powder+ honey
Marjoram	Leaf	Infusion
Lemon verbena	Leaf	Infusion
rocket	Leaf	Maceration, Decoction, Salad
Carob	Fruit	Decoction
Barley	Seed	Decoction
Garden cress	Seed	Infusion, Powder+honey
Chamomile	Leaf	Infusion
Beet	Fruit	Salad
Bean	Fruit	Decoction
Cumin	Seed	Infusion

- The type of growth "Herb" is the most frequent (75.7%), 94.8% of plants is cultivated, they are used more in the field of food and health (49.6%), in the preserved form (dried) (59.3%).
- Finally, the oral way is the most common way of administration (99.1%).

Discussion

This study reveals a very wide use of several plants in order to stimulate milk production. The most represented families are Fabaceae, Arecaceae, Apiaceae and Poaceae. Plants belonging to these families have already been reported by (Betzold, 2004; Teuscher et al., 2005 and Baudoux, 2017) as having a "galactagogue" property.

The effectiveness of certain plants such as *Trigonella foenum-graecum* by (Rekik and Bergaoui, 2016), *Phoenix dactylifera* by (Boudechiche et al., 2011) and of these two species at the same time by (Sakka et al., 2014) has already been demonstrated respectively in the milk production of rabbits, ewes and women. Indeed, the milk production of does treated with seeds of *Trigonella foenum-graecum* goes from 163.95g to 237.17g per day (Rekik and Bergaoui, 2016), that of ewes receiving scrap dates as a supplement goes from 0, 88 l/day to 1.14 l/day (Boudechiche et al., 2011) and that of women who received tea

based on *Trigonella foenum-graecum* and consumed fresh dates goes respectively from 35.5 to 50.8 ml/d and from 35.5 to 67.6 ml/d. The effect of *Trigonella foenum-graecum* on women's milk production was also revealed by (Forinash et al., 2012), which increases to 464 ml/d instead of 207 ml/d.

The methods of preparation listed are maceration, decoction, infusion, and others. These same results were found by (Byavu et al., 2000).

The most common way of administration is the oral way as was also revealed by (Deleke koko et al., 2009). This way of administration is due to the different methods of preparation cited by herbalists which result in either a liquid or a mixture of products that can only be given to women or animals through the mouth.

Conclusion

The survey taught us that there is a multitude of plants that act on milk production in women and that the administration of these plants can vary either:

- 1- By using water (infusion, maceration, decoction) orally.
- 2- By using the oil dermal.
- 3- Using the powder of the useful part of the plant after undergoing grinding and mixing with honey or yogurt orally.

The results of this investigation are very interesting because they show us how much milk production can be stimulated using a wide range of natural products and by employing different delivery methods.

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