

The use of *Ficuscapensis* Thunb (Moraceae) in African traditional medicine against female infertility and hypogalactia: literature review

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Abstract

Procreation and breastfeeding are two elements of the reproductive function. In Burkina Faso, infertility is a public health problem, and its treatment in hospitals involves ovarian stimulation, which is expensive in the present context. Exclusive breastfeeding also represents a challenge. We have to explore the knowledge of our traditional medicine to contribute to the care of cases of infertility and hypogalactia. *Ficuscapensis* is a plant used in for that.

The objective of this literature review was to inventory data on the use of *Ficuscapensis* in traditional African medicine against female infertility and hypogalactia. The data were collected from Prélude database, Persée, Google Scholar, ScienceDirect and Researchgate.

The extracts are used in traditional human and veterinary medicine to treat female infertility and hypogalactia in at least eleven African countries, including Burkina Faso. All regions of sub-Saharan Africa are concerned.

In both indications, the plant parts used are the roots, barks, leaves and fruit (figs). These parts are used alone or associated in various forms, including decoctions, macerations and infusions. They are administered orally, intrauterine, or by an abdominal or breast massage. Its biological properties as a lactogen and on the female sexual organs are not well documented.

Key words: *Ficuscapensis*, female infertility, breastfeeding, hypogalactia, literature review

Introduction

Procreation and breastfeeding are part of the great function of reproduction, which remains necessary for the survival of the human species. In Burkina Faso, infertility is a public health problem (*Somé E N and coll., 2016*), and its treatment in hospitals includes ovarian stimulation, which is costly in the current context (*Editions Le Pays, 2018*). Exclusive breastfeeding is also a challenge in our country, where until 2021, only 50% of infants are exclusively breastfed for their first six months (*ArcensSomé M T, 2020 ; Cresswell J A and coll., 2017*). We have to explore the knowledge of our traditional medicine to contribute to the promotion of breastfeeding and the care of infertility cases. In cases of infertility and hypogalactia, plant extracts are used in African traditional medicine. Among these plants we can cite *Ficuscapensis* Thunb.

Methodology

This was a literature review on the use of *Ficuscapensis* extracts in the traditional treatment of female infertility and hypogalactia.

Data was collected from the Prélude database, Persée, Gogle Scholar, ScienceDirect and Researchgate. The research focused on data related to the concerned African countries, the modes of therapeutic use of the extracts and their physiological and histological effects on the mammary glands and female internal sexual organs.

Distribution and botanical description

Ficuscapensis is widely spread throughout tropical Africa, from Cape Verde to Somalia and as far south as Angola and South Africa. It is a 5 to 8 and even 30 meters-height plant (Arbonnier M, 2002). The trunk has an average diameter of 150 cm. The outer bark is brownish, grey or whitish, and the inner bark goes from greenish to pink. The top of the tree is massive and spreading. The spiral-shaped leaves are simple, bright red when young and have an elliptical to oval blade, sometimes lanceolate (Fondation PROTA/CTA, 2013). *Ficuscapensis* produces figs on small, ramified, leafless branches, which are themselves located on the trunk or on older branches. The figs go from ovoid to globular, 1 cm to 4 cm in diameter, and greenish yellow when mature (Arbonnier M, 2002). All aerial parts produce a white latex.

Ficuscapensis is used in Africa to treat infertility and hypogalactia in human and veterinary traditional medicine.



A

B

Image: green figs (A) and leaves (B) of *Ficus capensis* Thunb. (Personal source)

Use in human traditional medicine to treat female infertility

In this domain, eight African countries were cited. The countries, the methods of preparation and administration of the products according to the parts of the plant used are presented in Table I.

Table I: distribution of countries, methods of preparation and administration of products according to the parts of the plant used to treat female infertility.

Parts of the plant used	Country	Mode of preparation	Administration route	Authors
Fruit only	Burkina Faso	Maceration with <i>Landolphia senegalensis</i> , <i>Vernonia guineensis</i> , <i>Cissus corylifolia</i> , <i>Vitex ceinkowskii</i>	Oral route	<i>Kerharo Jand coll., 1950</i>
	Ivory Coast	Maceration with <i>Landolphia senegalensis</i> , <i>Vernonia guineensis</i> , <i>Cissus corylifolia</i> , <i>Vitex ceinkowskii</i>	Oral route	<i>Kerharo Jand coll., 1950</i>
	Benin	Maceration	Abdominal massages, uterine lavage	<i>Natabou Dégbé F, 1991</i>
	Senegal	Decoction	Oral route	<i>Kerharo J and coll., 1964</i>
Roots only	Zimbabwe	Infusion with water	Oral route	<i>Gelfand Mand coll., 1985</i>
	Mali	Powder + roasted maize diluted in water or milk	Oral route	<i>Malgras D, 1992</i>
	South Africa	Unspecified	Unspecified	<i>Van Wyk B E and coll., 2000</i>
Stem bark only	Burkina Faso	Decoction	Oral route	<i>Zerbo Pand coll., 2011</i>
	Ivory Coast	Unspecified	Oral route	<i>Adjanohoun Eand coll., 1979</i>
Fruit and bark	Benin	Powder mixed with water	Oral route	<i>Adjanohoun Eand coll., 1989</i>
Leaves, roots, bark and fruit	Nigeria	Unspecified	Unspecified	<i>Olowokudejo J D and coll., 2008</i>

Among eleven recipes reported by the authors, the fruit was the part of the plant most used to treat female infertility, i.e. in six cases. Maceration was the most commonly used method of preparation, in most cases for oral administration.

Use in traditional veterinary medicine to stimulate reproduction

In Senegal, the roots are used singly, roasted and applied on the udders by massage (*Kerharo Jand coll., 1974*). There, the fruits are also used singly in the form of macerates for abdominal massage and uterine lavage (*Kerharo J and coll., 1974*). In Ivory Coast, the leaves and fruits are used separately, and each product is administered orally respectively in the form of a decoction and a macerate through different protocols (*Koné W M and coll., 2008; Ake-Assi Y A, 1992*). In Nigeria, the leaves are used in association with the fruit to stimulate animal fertility (*Dalziel J M and coll., 1937; Curasson M G, 1949*). The recipes for this combination of leaves and fruit used in Nigeria have not been specified by the author.

Use in traditional human medicine to treat hypogalactia

This use was practiced in nine African countries. The countries and the methods of preparation and administration of the products according to the parts of the plant used are presented in Table II.

Table II: distribution of countries, methods of preparation and administration of products according to the parts of the plant used to treat hypogalactia.

Parts of the plant used	Country	Mode of preparation	Administration route	Authors
Fruit only	Benin	Maceration	Unspecified	<i>Natabou Dégbé F, 1991</i>
	Mali	Powder, dried, mixed + salt + millet porridge	Oral route	<i>Adjanooun Eand coll., 1981</i>
		Crushed fruit Maceration in water	Oral route	<i>Malgras D, 1992</i>
		Powder and water	Oral route and applied on the breast	<i>Nordeng Hand coll., 2013</i>
Stem barks singly	Zimbabwe	Infusion with water	Oral route	<i>Gelfand M and coll., 1985</i>
	Ivory Coast	Decoction with water	Oral route	<i>Ake Assi L, 1990</i>
		Unspecified	Oral route	<i>Adjanooun Eand coll., 1979</i>
	Tanzania	Juice	Oral route and applied on the breast	<i>Rimbach L, 1977</i>
Roots singly	Senegal	Unspecified	Oral route and applied on the breast	<i>Kerharo Jand coll., 1964</i>
Roots and bark	Guinea-Bissau	Unspecified	Unspecified	<i>Catarino L and coll., 2016</i>
Leaves and fruits	Ivory Coast	Maceration	Unspecified	<i>Tra Bi Fézan H and coll., 1997</i>
	Ghana	Decoction	Oral route	<i>Addo-Fordjour</i>

				<i>P and coll., 2008</i>
Leaves, roots and fruits	Nigeria	Unspecified	Unspecified	<i>Olowokudejo J D and coll., 2008)</i>

The fruits are also the most widely used part of the plant for treating hypogalactia, as they are for treating infertility. Maceration was also the preparation form most widely used.

Use of *Ficuscapensis* in traditional veterinary medicine as a lactogen

Ficuscapensis is used in four sub-Saharan countries in traditional veterinary medicine to increase breast milk production. These are Nigeria, the Democratic Republic of Congo, Tanzania and the Republic of South Africa. In these countries, it is used on ruminants. In Nigeria, it has been reported that the leaves and fruits are used together and administered orally, but no details are given on how they are prepared (*Dalziel J M and coll., 1937; Curasson M G, 1949*). In the Democratic Republic of Congo, the leaves are combined with salt and given to the animal. In Tanzania, a combination of roots, bark and leaves is used as a decoction or infusion to massage the animal's udder in order to stimulate lactation (*Watt J M and coll., 1962*). In South Africa, however, an infusion of a combination of leaves and bark is used, but the route of administration is not been specified (*Hutchings A and coll., 1996*).

Biological effects on mammary glands and sexual organs

In this aspect, a study reports that *Ficuscapensis* stimulates prolactin secretion in cercopithecidae from Côte d'Ivoire (*Sawadogo L, 1993*). It is therefore necessary to continue research investigating the effects of *Ficuscapensis* extracts on the physiology and histology of the mammary glands and female reproductive organs.

Conclusion

Ficuscapensis extracts are used in several African countries to treat female infertility and hypogalactia. It would be useful to investigate the impact of these extracts on procreation and lactation to confirm the biological effects traditionally attributed to them.

Key words: *Ficuscapensis*, female infertility, breastfeeding, hypogalactia, literature review

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