

Study of the Sustainability and Impact of Ashes as a Stimulant of the Active Ingredient on Lactation of Unmated Rats: *Euphorbia Hirta* cases

ADEPO Yapo Prosper¹, BOLOU Gbouhoury Eric-Kévin², BONNY Aya Carole³

¹Laboratory of Biochemistry and Food Science, Faculty of Biosciences University Félix HouphouëtBoigny, Abidjan (Ivory Coast)

²National floristic center, Faculty of Biosciences University Félix HouphouëtBoigny, Abidjan (Ivory Coast)

³Biotechnology laboratory, Faculty of Biosciences University Félix HouphouëtBoigny, Abidjan (Ivory Coast)

Abstract: The study of sustainability by cultural techniques for his cycle keeps facing a climate aridity due to the long dry season and the highlight of the ashes like the stimulating effect of the active ingredient of the plant *Euphorbia hirta* on lactation were conducted. This plant native to South America has spread throughout Africa. In fact this species is influenced by favorable rainfall and decreases as against (dry) season. The study of the sustainability of the plant was conducted in the area Bingerville neighborhood district of Abidjan, a city south of the Ivory Coast to locate this *Euphorbiaceae*. Cultivation techniques have been developed to promote sustainability on one hand and evaluate the other hand the stimulating effect of the ash with the active ingredient consisting of ethanol extract of lactation strains of ratswistar. The observations have shown and confirmed that extracts of *Euphorbia hirta* this species besides ash would activate milk secretion in rats. Moreover, farming techniques have shown results that can promote the sustainability of the plant *Euphorbia hirta*. And this plant will help solve the problem of nursing mothers who breastfeed their children for whom milk is an essential nutrient for the growth and protection against disease.

Keywords: *Euphorbia hirta*, lactogen, optimization, Ivory Coast, breastfeeding ashes

1. Introduction

Euphorbia hirta of the Euphorbiaceae family, it is an herb, widespread in tropical regions of Africa (N'Guessan, 1995; Ake, 2002)). In Ivory Coast, it grows in wastelands, since the forest area until savannah. However, its availability remains difficult in dry seasons (Ivens, 1989 and The bourgeois, 1993), previous work has not clarified its production against season to maintain its cycle in the presence of which the use of cultivation techniques to ensure sustainability.

Indeed it is widely used in traditional medicine for a variety of therapeutic indications such as gastrointestinal infections, respiratory, liver. The decoction of the whole plant is effective against dysentery drink (Adjanooun, 1990). It is also used for its diuretic and sedative effects (Lanheretal.2005).

In Ivory Coast, the plant named akodoudou or akolulu vernacular Baoule ethnic group of the great center is used orally to stimulate the production of prolactin which the highlight was proven in the unmated rats (Sawadogoetal. 1988). Indeed, in many tropical countries such as Ivory Cost, especially in rural areas, the advent of generic drugs, many treatments are still inaccessible to a large segment of the population. The practice of traditional thérapeutique is then relatively more accessible alternative. Thus, to look after their children, mothers turn to flora in order to seek the essential plants as remedies for the ills that plague our contemporaries as for women who have difficulty breastfeeding their infants (Koné et al. 2002).

2. Materials and Methods

Animal Material

The biological material consists of strain Wistarrats unmated adults, with an average weight of 255 ± 5 mg.

Biological Material

The plant material consists of grains walls and cuttings with or without armpits lengths of 3.5 to 6.5 cm of the plant *Euphorbia hirta* harvested Bingerville outskirts of Abidjan, the area has a tropical climate like everyone southern Ivory Coast.



Euphorbia hirta of the Family Euporbiaceas

Experimental Scheme for Optimizing the Culture of the Plant *Euphorbia hirta*

36 boxes kneaded one hand contain paper (cellulose) prewetted and pots 36 in number on the other hand are perforated in the lower third in the lengthwise to facilitate

drainage of water. Grains, cuttings with underarm are deposited in the specified equipment.

Selection of Plots and Clearing

Preconditions are applied in the selection of the plots. The grains or cuttings are grown near a permanent water source (river or creek). This allows to humidify the surrounding soil and water supply for irrigation possible. Before receiving differences seeds, the soil is tilled to a depth of 25 to 30 centimeters in order to furnish it. Large clods are broken manually. The soil is leveled to avoid the presence of stagnant water.

Seeding and Culture

The beans are placed in boxes of twelve kneaded, twelve pots and two plots. Cuttings are deposited in underarms with twelve petri dishes, pots and two twelve plots. Also, cuttings without armpits are deposited in twelve petri dishes, pots and two twelve plots. The application is used for seeding grain *Euphorbia hirta* on the plots. The row planting technique is used for planting cuttings. A fluid intake is performed in the morning and evening.

Assessment Methodologies Lactogen Power from the Joint Action of Ash and the Ethanol Extract as Active Principle

The rats receive by gavage using a syringe 5 mL solution containing 1g of *Euphorbia hirta* (Sawadogo et al. 1988). Feedings take place every morning at 8 am and evening at 16 hours continuously for 4 days.

Table 1: Distribution Sampling of 30 Rats.

Lot	Number of animals	Treatment	Method of administration	Duration in days
1	6	dry aqueous extract of <i>Euphorbia hirta</i>	gavage	4
2	6	Distilled water Witness (-)	gavage	4
3	6	Galactogyl Witness (+)	gavage	4
4	6	ethanol extract (pectin) <i>Euphorbia hirta</i>	gavage	4
5	6	ethanol extract <i>Euphorbia hirta</i> +ash	gavage	4

Preparation of Serum Samples

The day after the fourth day fasting blood samples of at least 2 ml are made at the jugular vein in nunc tubes 4ml capacity just after sacrifice. These tubes with polystyrene support are kept in a cooler with ice. The collected blood is centrifuged at 3000 rpm / min for 10 minutes using a Jouan centrifuge. The resulting sera are test samples of prolactin.

Determining the Specific Indicator in Assessing the Power Lactogen

Assay of prolactin content in blood samples taken. The reactions are based on the principle of enzyme immunoassay of human prolactin by a sandwich assay using two monoclonal antibodies. Prolactin content is determined according to the method of (Djiane et al 1984) of which the assay principle involves the enzyme-linked immunosorbent sandwich a final fluorescence detection. The reading is made at a wavelength of 450 nanometers. The results obtained in

40 minutes are calculated automatically by the instrument relative to a calibration curve.

Statistical Analysis

All data were collected suomi to an analysis of variance and mean values compared by the test Neuwman-Keuls. The results are presented in tables as mean \pm standard deviation forms. a, b, c, and d are letters brought by exposing averages for the comparison test. They are from the test applied STATISTICA 6.0. And means followed by the same letter in the column are not significantly different at the 5% level.

3. Results

The petri dishes Table 2 in number 10 of 12 are negative in grains and vice versa in the cuttings. In pots, 10 of 12 give satisfactory results in terms of cuttings. In the plots, only cuttings give satisfactory results. The rods in the presence of underarm produced buds. In addition, the stems near the roots give satisfactory results. Buds appear 7, 14, 21 days respectively in petri dishes, in pots and plots after sowing. Moreover, the harvest sites, spontaneously detached grains germinated.

Table 2: Dimensions Leaves after Planting the Cuttings with Underarm

Materials	Numbers testing	Lengths appeared sheets (centimeters)
Petri dishes	10	1.08 \pm 0.10a
pots	10	1.14 \pm 0.17a
Plots	2	1.2a

a, b, Means with different superscripts in the same row are significantly different ($P < 0.05$).

For each substance administered, the plasma concentration values observed in prolactin on all rats consist of package enabled to present results which are shown in Table 3. These prolactin values obtained are all different except values equivalent for substances of Galactogil and aqueous extract of *Euphorbia hirta* administered that are statistically identical.

Table 3: Plasma Prolactin Concentrations in Rats Treated under Different Treatment

Substances administered	Plasma prolactin concentration (ng / ml)
Distilled water	10.41 \pm 0, 11a
Galactogil	15.26 \pm 0.84 d
Aqueous extract of <i>Euphorbia hirta</i>	15.22 \pm 0.67 d
Ethanol extract of <i>Euphorbia hirta</i>	12.17 \pm 0.36 b
Ethanol extract of <i>Euphorbia hirta</i> + ash	13.93 \pm 0.69 c

a, b, c, d Means with different superscripts in the same row are significantly different ($P < 0.05$).

4. Discussion

The study on serum prolactin in potential observed in adult rats subjected to different pharmacological substances responds to a lack of data for both laboratory experiments for the evaluation of breast milk production in the state in nourishes Ivory Coast.

In addition, regeneration in *Euphorbia hirta* by grains was possible through the grains spontaneously fallen after

maturity. These results confirm those of Ivens (1989) on the availability of the plant in wet seasons, hot. However a long drought may cause low availability. In addition, reserves are depleted during the long dry seasons. In view of the results, the regeneration cutting is possible. Technical routes have allowed the establishment of a relatively interesting production system. They indicate good availability during long dry seasons considered arid seasons. The mastery of production for a significant performance ensures that the plant can be produced through the grains and cuttings. This will list two ways of producing particularly through cuttings and seeds. This could promote ease of access to this plant. Otherwise the measurement of serum prolactin in treated animals and in control animal has achieved the values. These values show that the prolactin level in animals is relatively higher than that of the control animal (10,41mg / ml). Prolactin levels are decreasing in rats with Galactogil (15.26 ± 0.84 ng / ml), the aqueous extract of *Euphorbia hirta* (15.22 ± 0.67 mg / ml), the ethanol extract *Euphorbia hirta* + ash (13.93 ± 0.69 mg / ml), *Euphorbia hirta*ethanolic extract (12.17 ± 0.36 mg / ml) and distilled water (10.41 ± 0, 11 mg / ml). This content is relatively higher in the rats treated with the ethanol extract associated with the ash that rats treated with the ethanol extract only. Considering the results from various extracts, the significant difference in average suggests the presence of an active ingredient in lactogen indicated plants. The high content of prolactin in female rats treated with the ethanol extract associated with the ash relative to that of the ethanol extract is due to the stimulatory effect of minerals (Houdebine et al., 1990). In general, minerals are metal cofactors which would activate the stimulation of the enzymes involved in the induction of the production of prolactin. Indeed Prolactin is the hormone that promotes milk secretion. Moreover, previous studies have shown that calcium considered cofactor is involved in concerted action with the lactogen principle in the plant *Euphorbia hirta*. Therefore, calcium is mostly used in the manufacture of stimulants in the milky secretion.

In conclusion this experimental study confirms that *Euphorbia hirta* lactogen would contain substances endowed with power fairly widespread in plants likely to impact the production of breast milk. Thus the potential lactogen would be enhanced by the presence of minerals in a concerted action with the active ingredient which has a carbohydrate nature therefore the sustainability of this plant species deserves to be popularized for general use as lactogen plant especially rural women breastfeeding.

References

- [1] Adjanohoun E. I. (1990) State of evolution of African ethnopharmacology. Bull. Med. Trad. Phar, Paris 59-63.
- [2] Ake A. L. (1984) Flora of Ivory Coast; biographical and descriptive study with some ethnobotanical notes. PhD thesis of State for Natural Sciences, Faculty of Science, University of Abidjan. 6 booklet, 1208p.
- [3] Houdebine L.M., Sawadogo L and Sepehri H. (1990) Study of the lactogenic action of beer. French Scientific Expansion, 147: 1-4.
- [4] Ivens G. W. (1989) East African Weeds and Their Control. Oxford University Press, Nairobi, Kenya, 289 p.
- [5] Kone M.M., Atindehou K.K., Tere H., Traore D. (2002) Life sciences and earth special issue of the activity of the International Symposium suice center 27 to 29 August 2001 Academic Edition of Ivory Coast (EDUCI).
- [6] Lanher Mr. C., Nicolas J-P., Fleurentin J., Neniger B. (2005) *Euphorbia hirta* in all its lactogens of plants. Plants Monograph. N° 36.
- [7] The Bourgeois T. (1993) Weeds in cotton rotation in northern Cameroon (Africa). Habitat magnitude and degree of infestation - Development Round. Thesis USTL Montpellier II, Montpellier, France, 241p.
- [8] N'Guessan K. (1995) Contribution to ethnobotanical and floristic study krobou countries (Ivory Coast). Paris ACCT 275p medicine.
- [9] Sawadogo Land Houdebine L. M. (1988) Induction of beta-casein synthesis in the mammary gland of the rats treated with plant extracts. Cr .acad.sci.Paris (a), 306, 3: 167-172.