Production of Improved Traditional Medicines: Case of Antiparasitarian in Goat Summary on the Current Stage of Work

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Abstract: The importance of gastrointestinal parasitic infections is due both to their frequency and the severity of the disorders they cause. Parasitism is one of the causes of the brake of the profitability of goat farms. Breeders thus have to face this thorny challenge which constitutes a real handicap to the development of this breeding. The high costs of interventions and veterinary medicines as well as the low incomes of livestock farmers are attracting increasing interest and demand for traditional medicines. Ethnobotanical and ethnopharmacological surveys and laboratory analysis on Vitex thomasii De Wild have revealed its safety and confirmed its antiparasitic properties on goats. The use of indices of credibility has permitted to choose Vitex thomasii De Wild amongst many other recipes recorded in 2011 in Democratic Republic of Congo. This recipe has permitted the production of an antiparasitic improved traditional medicine. The determination of dose and conditioning, unknown in traditional medicine, followed by good manufacturing practices has led to easy administration and conservation of phytomedicine.

Key words: Improved, traditional, medicine, antiparasitic, goat.

1. Introduction

In Lubumbashi and in its green belt, as in most of tropical areas, goat husbandry is poorly produced by inadequate management and poor animal health [1].

Parasite infections by gastrointestinal helminths remain among the main causes of this decline in production [2-5]. They are among the pathologies that dominate the pathological spectrum of the goat in general in Africa and the southern part Sahara in particular [6]. They are therefore of great importance because of their prevalence and pathogenicity [4].

Control of these infections is generally based on the strategic use of anthelminthic [4].

However, these anthelmintics are not always available at all times, or when they are, their costs are so high that they are not readily available [7]. Over the last few years, the high cost of conventional treatments and the low level of income have led to growing interest and demand for traditional herbal medicines. Unfortunately, this enormous medical potential suffers from a lack of scientific evidence of the safety and therapeutic efficacy of these locally produced and less expensive herbal medicines.

In developing countries, which are heavily affected by these parasitic infections, the traditional methods of control used by herders remain largely dependent on medicinal plants [2]. For example, we have initiated various studies of pest control recipes so that we can identify them and make them available to livestock farmers. Some of them nontoxic by the oral route such as bark powder from the root of vitex, has a fairly widespread and longstanding use. Laboratory tests can be used to prove their safety in these plants and to confirm pest control activities in laboratory animals. In addition to these scientific experiments on safety and efficacy, the pharmacological experimentation of traditional remedies requires prior galenic formulation to facilitate its administration.

The present work proposes to quantify the dosage of
one of these traditional recipes for its galenic formation. The choice of this recipe among others has been made through the credibility indices that we have defined.

We want to make it clear to you that this is still a work in progress.

2. Material and Method

2.1 Choice of Vitex thomasii De Wild

2.2 Definition of Credibility Indices

In an ethnopharmacological and ethnobotanical survey carried out in Haut-Lomami in Katanga in 2009-2010, 118 recipes based on 97 plants were identified.

(1) Some of them treat some signs, symptoms and/or complications of animal verminoses. This dual role they assume could be a potential indicator of credibility for them.

(2) Others were used by at least 43 of the 102 informants. These strong repetitions are a likely indicator of credibility for revenue (the recipe).

(3) The reduction in fecal excretion of eggs observed in treated animals is a possible indicator of credibility for the recipe generated by this plant.

(4) The presence of one or more deworming molecules is an indicator of credibility.

2.3 Search for Plants with High Credibility

Let the universe of 4 possible indices of recipe credibility define above for each plant. Supposed a plant to be credible must check all 4 possible clues. Then all the indices form equiprobable contingencies whose probability of each one is 1/4. Thus, the certain event has a probability sum of $4/4 = 1$. Only plants with at least two possible credibility indices are taken into account.

Nine species have proved to be more credible. Among them, the most credible is *Vitex thomasii* (Fig. 1).

The toxicity studies carried out on this plant show that it is very low in toxicity. It is for these reasons that this species was therefore selected for the preparation of the antiparasitic MTA according to good production practices.

The absence of the toxic effects of this plant allows the use of strong and frequent doses.

2.4 Preparation of the Extract

A participatory survey in 7 localities in Haut-Lomami allowed *Vitex thomasii* antiparasitic recipes to be registered with 46 traditional healers. We have retained the production of an aqueous extract according to this traditional method of preparation.

Fig. 1 *Vitex thomasii* De Wild.
2.5 Determination of the Dosage

The quantification of the assay was carried out as follows:
- Determination of the therapeutic dose by lyophilization of 250 mL of the aqueous extract (number of repeats: 10);
- Determination of the amount of lyophilisate for a therapeutic conditioning in 125 mL of solution;
- Determination of the amount of lyophilisate for 1 tablet and choice of excipients according to the therapeutic dictionary [8];
- Determination of the amount of lyophilisate for 1 capsule of capacity 0.205 g and then choice and determination of the quantity of the inert excipient.

3. Discussion and Conclusion

Bibliographic research and the comparison of data from field surveys have provided an update on the current scientific knowledge of *Vitex thomasi* and justify the interest of this species for the production of ATMs [9].

One of the important steps in this production is the galenic formulation of the drug in order to facilitate its administration.

It is at this level that I am currently studying. The determination of the dose will be made by the calculation of the dosage, the preparation and the conditioning of this medication under the three oral dosage forms: tablets, sachets and drinkable suspensions.

The development of modern medicines is a long and very expensive process, which requires a series of rigorous laboratory tests and clinical trials before being put on the market. With regard to traditional medicines, this process becomes more complex with enormous difficulty in applying standard testing and evaluation methods, thus limiting the efforts to discover and develop these herbal medicines.

In addition to the lack of funding and infrastructure, the development of these phytomedicines is also confronted with a limited competence base and a lack of access to the technological platforms needed for research into these drugs. These and other reasons justify not only the limitations and shortcomings of this work, but also why decades of research on traditional medicines have so far only led to the development of few pharmaceuticals.

In spite of these limitations, the millennial uses of medical plants are generally confirmed by the results of scientific research and justify why WHO proposes a lightweight protocol for the production of safe and effective plant-based pharmaceutical preparations in order to be in the face of local priorities for medicines essential for the management of major pathologies.

By developing phytomedicine with good harvesting and manufacturing practices, and drawing on the knowledge of traditional healers who use them to deliver primary health care, an exceptional opportunity is provided to link three of the key development indicators sustainable development: health, rural development and the environment.

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