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A new record of ethno-veterinary practice using *Tinosphora rumphii* Boerl. among goat raisers in Southern Mindanao, Philippines

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ABSTRACT

This is a new recorded ethno-veterinary importance of *Tinosphora rumphii* Boerl. particularly used by Halal goat raisers in the Southern part of the Philippines. This plant is one of the commonly known medicinal plants in the country. Based on the interview conducted, the species was used to treat wounds near mouthparts of goats. Wounds are primarily associated to the consumption of some plants like *Mimosa pudica* and *Mimosa diplotricha.* The stem of *T. rumphii* is usually crushed to extract the fluid including the sap. Halal goat raisers attested the wound healing capacity of *T. rumphii.* This preliminary record of new veterinary practive can be used to develop plant-based medicine for future commercialization.

Key words: *Tinosphora rumphii*, wound healing, Halal goat, ethno-verterinary practice.

INTRODUCTION

Globally, the use of plants as a remedy to common illnesses of humans and other animals has been accepted among indigenous people. Extracts of different parts of a plant are traditionally utilized for medicinal purposes in various traditional practices. Moreover, plants also constitute a main part of traditional veterinary practices and have been proven to be a rich source of botanicals in animals for several centuries (Jabbar et al. 2006).

It is well-known that farmers practice indigenous knowledge which forms a valid basis for popular adoption in the farm in the Philippines. Despite of the availability of commercial medicine, small-scale livestock farmers still use plant with

medicinal value since it is cheaper, available in the locality, and has been a traditional knowledge handed down for generations.

MATERIALS AND METHODS

Study Site

The study was conducted in selected areas of Region XII- Phillipines. Twelve (12) municipalities/ cities: North Cotabato- Pigcawayan, Aleosan, Carmen, and Kabacan; Sultan Kudarat- Columbio, Pres. Quirino, Tacurong, Isulan; South Cotabato- Tantangan, Tupi, Polomolok; and General Santos City were the samplings sites (Fig. 1).

Data Gathering

Descriptive research design was used in the study. Prior to data gathering, informed consent was sent to each municipality/city. Meetings with the Provincial Agricultural Officer, Municipal Agricultural Officers, livestock technicians and Barangay Chairpersons of the different barangays with highest concentration of goats were done to discuss the rationale of the study.

A total of 131 respondents were interviewed. A survey questionnaire was used which include socio-demographic, socio-economic, goat farm information, challenges in goat production and cases of toxicities. The main point of the survey was to determine challenges in goat production but other inputs like ethno-veterinary practices were included and recorded as stated by the respondents.

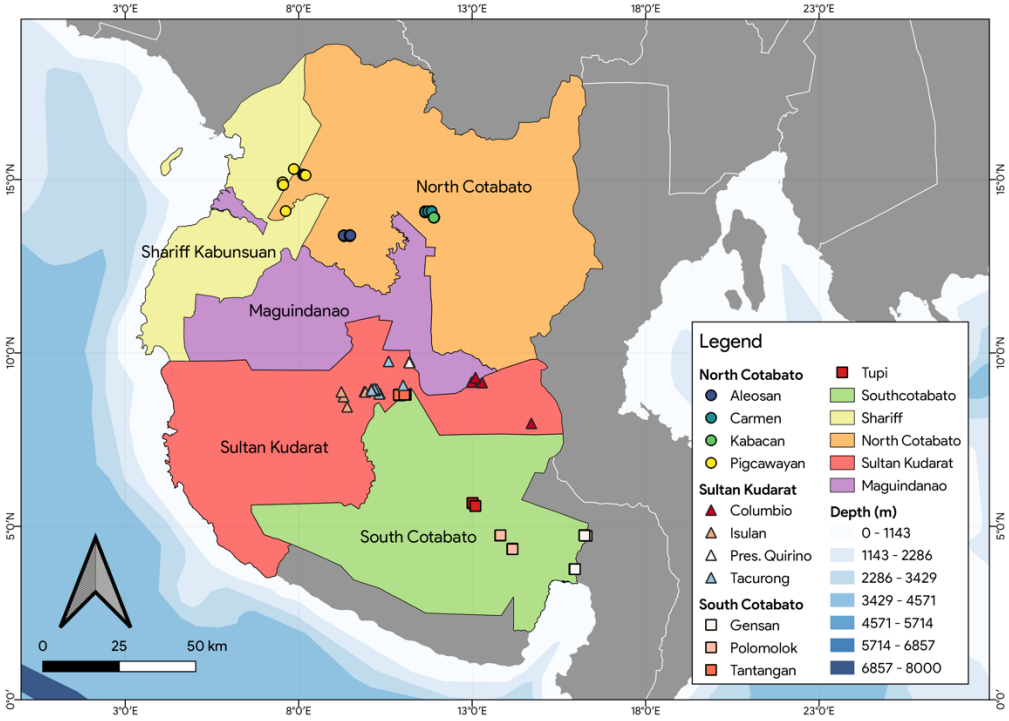

Fig. 1. Location of the respondents included in this study.

RESULTS AND DISCUSSION

From the survey, a goat raiser provided additional information on the utilization of *T. rumphii*. The farmer stated that hte stem crude extract of this plant was commonly used to treat wounds near mouth parts of goats. Wounds are due to the consumption of *Mimosa pudica* wherein the plant exhibit thorns which protects them from herbivory. These wounds are prone to infection which affects the food intake of goats. The stem of *T. rumphii* (Fig. 2) is usually crushed according to the farmer and the sap is applied directly to wounds. The application is done once a day and the effect were observed two to three days after constant application.

One of the traditionally used medicinal plant in the Philippines to treat a variety of illnesses is *Tinospora rumphii* (Menispermaceae). Traditional uses of this plant include treatment for hypertension, wounds, intestinal worms and skin infections (Kadir et al. 2011), stimulation of appetite and protection from mosquito bites (Zulkhairi et al. 2008). Various studies have elucidated the plant's many biological activities such as antioxidant activity (Zulkefli et al., 2013), immunomodulatory effect of isolated fraction of the stem (Abood et al. 2014), anti-inflammatory activities (Hipol et al. 2012), analgesic and anti-microbial activities (Ariful Islam et al. 2014), anti-angiogenic activity (Galia & Galia 2016), anti-diabetic potential (Arcueno et al. 2015), due to its capacity to lower blood glucose level, antimalarial, parasiticidal and insecticidal properties (Stuart 2014). In addition, phytochemical studies revealed the presence of alkaloids (Choudhary et al. 2010), phenols and flavonoids (Ibrahim et al. 2010), and diterpenes, flavones and triterpenes (Koay and

Amir 2013). Stuart (2014) also added that the plant contains columbine, tinosporine, tinosporidine, picroretine and traces of berberine.

Tinospora rumphii has been studied for its anthelmintic property against internal parasites of goats. Fernandez (1997) elucidated the potential of this plant as an anthelmintic against *Haemonchus contortus*. The effective dose and quality control of *T. rumphii* extract mixed with *Chrysophyllum cainito* and *Mimosa pudica* against similar parasite has been established by Fernandez et al. (2013). This capacity of the plant is also supported by the study of Balala & Pradera (2016) which stated that *T. rumphii* and *Mimosa pudica* can be used as a potential pill for *H. contortus.* The anthelmintic property of *T. rumphii* is the most common traditional and farm application of the plant for goats.

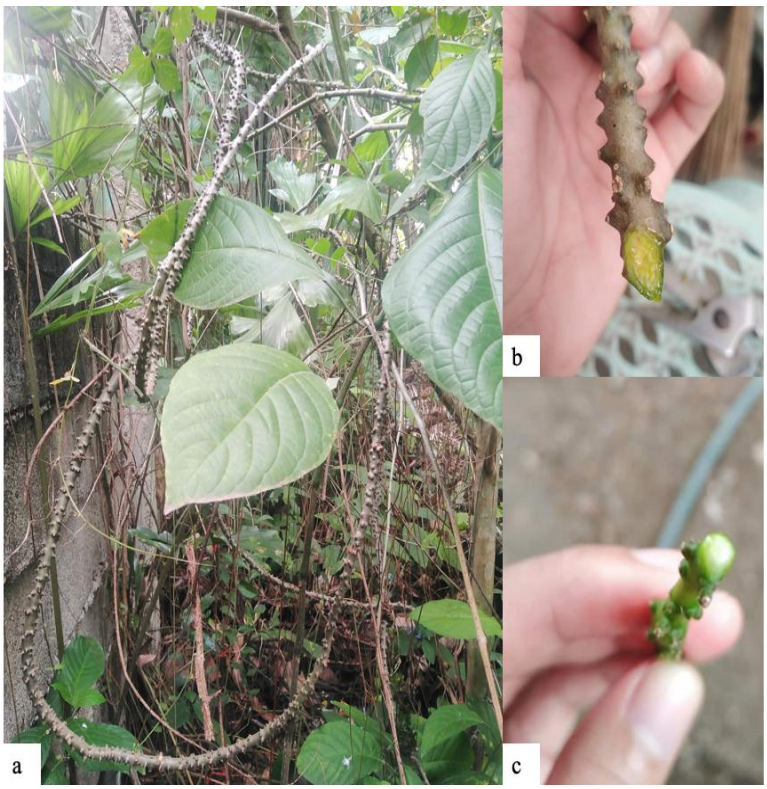

Fig. 2. Habit of *Tinosphora rumphii* (a); cut stem showing the sap (b-c) used for treating wounds of goats near mouth parts.

However, another ethno-veterinary practice done by Halal goat raisers was recorded by the researchers in Southern part of Mindanao, Philippines.

Studies on the wound healing property of *T. rumphii* is scarce. This result is contrary to the study of Arcueno et al. (2015) wherein the ointment from the plant had not contributed significantly to wound healing time and percent wound contraction of mice. This paper is an explorative result which can be considered in conducting further investigation on the wound healing capacity of *T. rumphii* extract. Investigation on the efficacy of botanicals to some problems of Halal goat production is necessary considering the fact that possible contamination of non-Halal materials should be prevented.

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