

Elephant Health Caring Plants for Mahouts, Camp managers and Veterinarians in Myanmar

Thin Zar Lin¹, Thandar², ThidaMyint³
thinzarmyomint@gmail.com

Abstract

Asian elephants (*Elephant maximus*) are an endangered species that illustrate the challenges of optimizing and integrating resource allocations for animal health and conservation. There is a need to identify strategic investments in Asian elephant health that will yield maximal benefits for overall elephant health and conservation. The study area is a famous Resort for Ecotourism and Elephant Nursery Camp of East Bago Yoma. Mahouts, camp managers and veterinarians possess a high traditional knowledge on plants in study site. As an exploratory first step, a survey was administered to mahouts, camp managers and veterinarians from elephant camp at workshop to help prioritize health-related concerns that will mostly benefit elephant. Responses were received from 15 mahouts, 3 camp managers and 5 veterinarians from 3 states and 3 divisions that had a range of experience with captive elephants. Altogether seven plant species were recorded as elephant care. The occurrence of medical conditions and response to treatment varied among responses. Data collections were analyzed statistically. This paper highlights on indigenous knowledge basis for treatment of the elephant care. The studies focused on the vital role of flora for captive elephants. This research will introduce the “ethnoveterinary medicines” in our country.

Keyword: Ethnoveterinary

¹Lecturer, Dr., Department of Botany, Meiktila University

²Professor and Head, Dr., Department of Botany, Meiktila University

³Professor, Dr., Department of Botany, Meiktila University

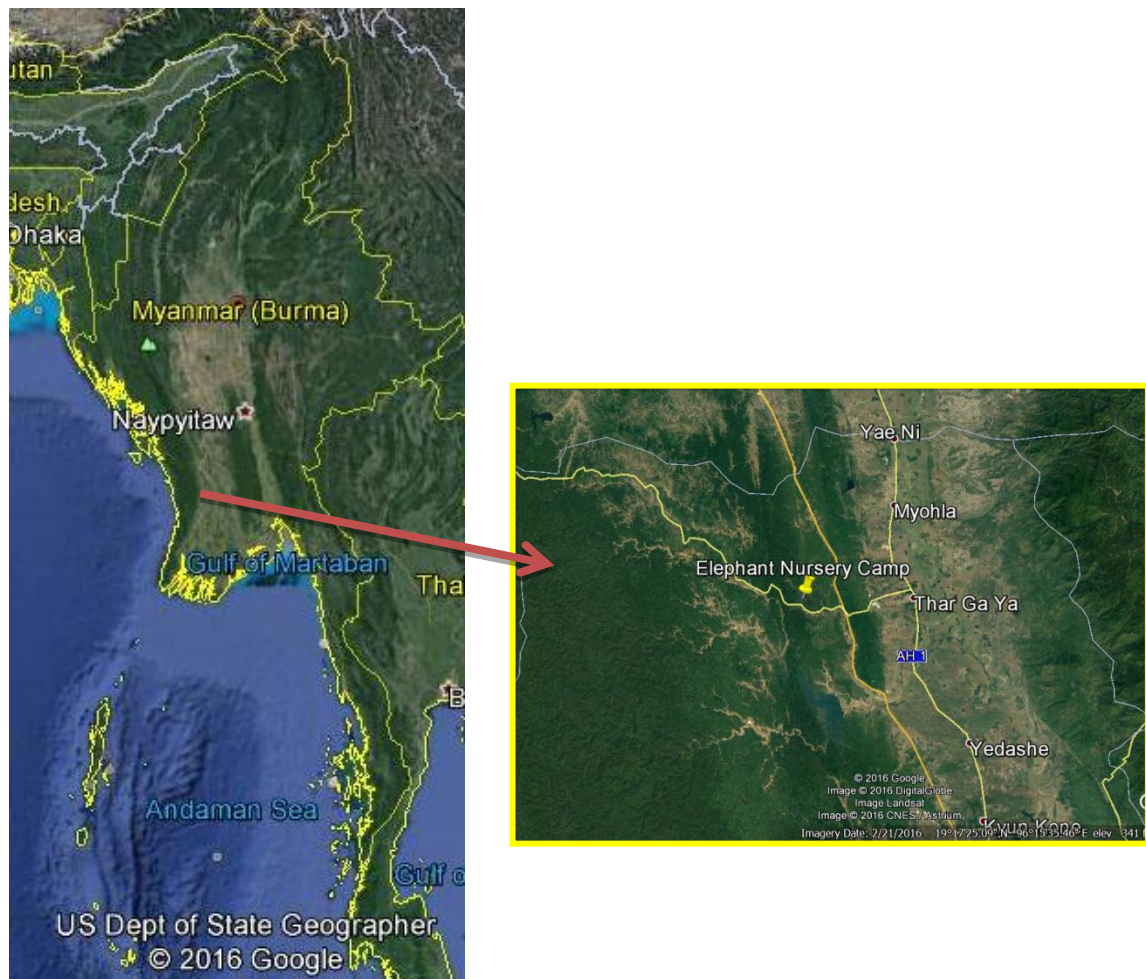


Figure (1) Study area

Introduction

Asian elephants (*Elephant maximus*) are the largest terrestrial animals in Asia. They are classified as Endangered (EN A2c) on the 2010 IUCN Red List of Threatened Species. Elephant mahouts (keepers) may also provide important insights into elephant ecology and biology. The study of the relationship and interaction between plants and animals is called ethnoveterinary. Ethnoveterinary medicine refers to people knowledge, skills, methods, practices and beliefs about the care of their animals. In study area, mahouts, camp managers and veterinarian possess a high traditional knowledge on plants. They primarily depend upon plants resources from Moist Upper Mixed Deciduous Forest (MUMD). The mahouts widely used the plants for elephant' healthcare every day in study area. Therefore the present study deals within the scope of environmental studies emphasizing on 15 mahouts 3 camp managers and 5 veterinarians knowledge linked with local plants from Pho-Kyarelephant camp with the following aims and objectives: to investigate the medicinal plants for Myanmar domesticated elephants and to explore the ethnoveterinary medicine in East Bago Division, Myanmar.

Methodology

Research Design

The method used in this study is called the “Methods for use value”. Use values developed by Phillips and Gentry (1993a, 1993b) are applied in ethnobotany to calculate a value per folk or biological plant taxon. All collected plants were identified with Hooker (1894), Backer (1963) and Dassanayake (1980). The scientific name followed by Kress *et al.* (2003)

Species Use-Value for one informant

$$UV = \sum U_i/n$$

U_i = the number of uses mentioned by each informant for a given species

n = the total number of informants

Common methodologies during the field study

- ❖ Interviewing
The plant interview, artifacts interview, checklist interview, group interview
- ❖ Choice of the informants
20 to 60 “knowledgeable” informants (15 mahouts 3 camp managers and 5 veterinarians)

Organization chart of informants in study area

Informants	Number of informants	
Camp manager (Bago)	2	Division
Camp manager (Mandalay)	1	Division
Veterinarian (Bago)	4	Division
Veterinarian (Shan)	1	State
Mahouts (Bago)	6	Division
Mahouts (Ayeyarwady)	3	Division
Mahouts (Kayin)	3	State
Mahouts (Chin)	3	State
Total informants	23	Division and State

Results

In this paper, the plants were utilized for elephant’s health care observed in Elephant Nursery Camp, East Bago Division. Altogether seven families belonging to seven plant species are presented.

Table (1) The Elephant health caring plants in study area

No	Scientific Name	Habit	Family	Local Name	Plant Part	Utilization
1	<i>Careyaarborea</i> Roxb.	Tree	Lecythidaceae	Ban-bwe-phyu	Bk	Padding, Bac-so
2	<i>Costusspeciosus</i> Sm.	Herb	Costaceae	Pha-lan-taung-hmwe	Whpl	Uro-di
3	<i>Curcuma longa</i> L.	Herb	Zingiberaceae	Nanwin	Rhi	Inv-so, Bac-so
4	<i>Entadapursaetha</i> DC.	Woody climber	Mimosaceae	Doe-nwe	Bk	Web-di, Dul-sk
5	<i>Gamelinaarborea</i> Roxb.	Tree	Vervenaceae	Yamenae	Bk	Inv-so, Wou
6	<i>Tamarindusindica</i> L.	Tree	Caesalpinaceae	Magyi	Fr	Con,App, Uro-dis, Abs-ms, Fat, Nsn
7	<i>Tinosporacordifolia</i> Mers.	Climber	Menispermaceae	Sin-tone-manwe	St	Uro-dis, Abs-ms, Fat,

Plant part-Fr= Fruit, Rhi= Rhizome, Bk= Bark, Whpl= Whole plant

Utilization-Abs-ms = Absentmusth, App = Appetizers, Bac-so = Back sores, Con = Constipation, Dul-sk= Dull skin, Fat = Fatigue, Inv-so= Inveterate sore, Nsn= No sweating at nail, Uro-di= Urogenital disorder, Wou= Wound, Web-di=Webbed disease

Table (2) Matrix ranking of elephant caring plants

No	Scientific Name	Informants			Total scores	Use value	Species ranking
		Mh	CamMr	Vet			
1	<i>Careyaarborea</i> Roxb.	15	3	5	23	7.66	1
2	<i>Costusspeciosus</i> Sm.	10	2	1	13	4.33	2
3	<i>Curcuma longa</i> L.	11	2	2	15	5	2
4	<i>Entadapursaetha</i> DC.	15	3	5	23	7.66	1
5	<i>Gamelinaarborea</i> Roxb.	10	3	2	15	5	2
6	<i>Tamarindusindica</i> L.	15	3	5	23	7.66	1
7	<i>Tinosporacordifolia</i> Mers.	10	2	2	14	4.66	2

7.5 - above 1st group

4.0- 7.4 2nd group

1.5- 3.9 3rd group

Mh = Mahout, Cam Mr = Camp manager and Vet = Veterinarian

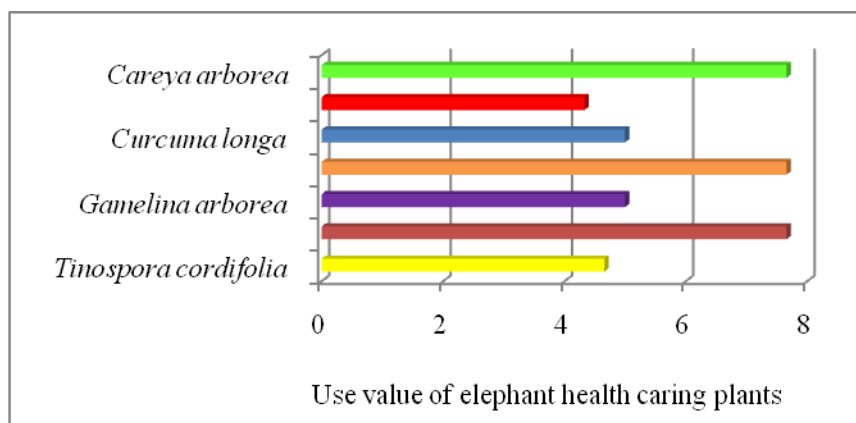


Figure (2) The utilization of elephant health caring plants

1. Scientific name *Careya arborea* Roxb.
 Family Lecythidaceae
 Local name Banbwe-phyu
 Part used Bark
 Utilization Padding and back sore
 Mode of administration Pounded and dry fresh bark place on back sores
 Distinguishing characters
 Tree; leaves oblong, narrowed at the base; inflorescence raceme; flower usually few, sessile, white; ovary inferior, annular disc present; fruit large, globose.
2. Scientific name *Costus speciosus* Sm.
 Family Costaceae
 Local name Phalan-taung-hmwe
 Part used Whole plant
 Utilization Urogenital disorder
 Mode of administration Feed the whole plants
 Distinguishing characters
 Annual herbs with underground rhizome; leaves alternate, simple; inflorescences terminal cone-like spikes with red coloured bracts; flowers yellowish-white.
3. Scientific name *Curcuma longa* L.
 Family Zingiberaceae
 Local name Na-nwin
 Part used Rhizome
 Utilization Inveterate sores and back sore
 Mode of administration Powdered of *Curcuma* wear on sores
 Distinguishing characters
 Tufty perennial herb; rhizome thick, much-branched, golden-yellow; leaves large, entire, cylindrical, arising from the leaves, on a scape of yellow flowers; greenish or whitish bracts; stamen with short filament, the anther versatile; two ovules; capsules ellipsoid.
4. Scientific name *Enta dapursaetha* DC.
 Family Mimosaceae
 Local name Doe-nwe
 Part used Bark
 Utilization Dull skin and webbed disease
 Mode of administration Fresh pounded bark rubbed on skin daily while bathing
 Distinguishing characters

A very large scandent shrub, all parts glabrous, the stems screw-like twisted with protuberances; bark thick, blackish or brownish, fissuring and corky lenticellate; cut red; leaves bipinnate, terminal one transform in a double tendril; flowers small, yellowish, sessile; pod woody with thickened borders.

5. Scientific name	<i>Gmelina arborea</i> Roxb.
Family	Lamiaceae
Local name	Yamene
Part used	Bark
Utilization	Inveterate sores and wound
Mode of administration	Boil fresh bark in 1 liter water until ¼ liter, wear on sore 3 times a day

Distinguishing characters

Tree, leafless during hot season, bark brownish grey, cut greenish pale-coloured; leaves more or less ovate to almost cordate-ovate, entire; inflorescences raceme, panicle at the end of the branches and above the axis of the fallen upper leaves; flowers showy on short yellowish pedicles; drupes ovoid, fleshy, the size of a palm, smooth and glossy, yellow.

6. Scientific name	<i>Tamarindus indica</i> L.
Family	Fabaceae
Local name	Magyi
Part used	Fruit
Utilization	Constipation, Appetizers, Urogenital disorder, Absentmuth, Fatigue and No sweating at nail
Mode of administration	Hand feeding the pulp

Distinguishing characters

A large tree, having spreading branches. Leaves consists of 10-18 pairs of small leaflets, leaflets oblong. Inflorescence in terminal raceme, yellowish orange or pale green; petals three, unequal; fertile stamens three base connate; ovary linear, many-ovuled pubescent. Pods oblong, slightly curved, reddish brown. Seeds 8-10, glossy, dark brown, embedded in a thick, sticky and acid brown pulp.

7. Scientific name	<i>Tinospora cordifolia</i> Miers.
Family	Menispermaceae
Local name	Sin-don-manwe
Part used	Stem
Utilization	Urogenital disorder, Absentmuth and Fatigue
Mode of administration	Feed powdered on unhealthy captive 2 tea spoons a day

Distinguishing characters

A large climbing shrub; stems grooved, bark corky; leaves simple, alternate; flowers unisexual; staminate flowers fascicled in the axils of small bracts; pistillate flowers solitary with green sepals; fruits drupe.



Careya arborea Roxb.



Costus speciosus Sm.



Curcuma longa L.



Entada pursaetha DC.



Gmelina arborea Roxb. .



Tamarindus indica L.



Tinospora cordifolia Miers.



Wound



Webbed-disease



Inveterate sores



Symptom absent musth



No sweating at nail



Inveterate sores



Carea arborea Roxb. for Padding or cushion



Workshop and interviewing to informants in study area

Discussion and conclusion

In this paper, the plants were utilized for elephant's health care observed in Elephant Nursery Camp, East Bago Division. Altogether seven families belonging to seven species were presented. These plants were used in different health problems for calve elephants. Some different plants species were used in the same type of skin disease while some were utilized in different health problems. The herbal medicines for elephant's health were investigated from the mahouts, camp managers and veterinarians who have already been involved in ethnoveterinary practices. The mahouts utilized these plants in different items for curing of elephant' diseases (Shu Mg, 2000).

Careya arborea Roxb., *Entada parsaetha* DC., and *Tamarindus indica* L. were recorded as first category of species ranking. *Careyaarborea*Roxb. was utilized for elephant back sores as padding or cushion. The pounded bark of *Entada*sp. was remarked as daily natural shower for elephant skin. It was widely used in skin disease of elephants e.g dull skin, webbed disease, inveterate sore and wound. The pulp of *Tamarindusindica*L. was mostly used in constipation, appetizer, urogenital disorders, absent musth, fatigue and no sweating at nail for elephant health.

Costus speciosus Sm., *Curcuma longa* L., *Gmelina arborea* Roxb. and *Tinospora cordifolia* Miers. were situated as second category of species ranking. Powdered of *Curcuma* rhizome was applied for abscess, back sore and inveterate sore. The essence of *Tinospora* was applied for inveterate sores of elephants. Boil the bark of *Gmelina arborea* Roxb. was used in inveterate sores and wound for elephant skin problems.

This study suggested that knowledgeable informants of study area have sound ethnoveterinary knowledge and practices. Ethnoveterinary medicine distilled from the traditional knowledge and experience was locally available, less expensive, more ecofriendly, no residual effects can avoid antibiotic resistance, and can be used without veterinary supervision and as good first-aid. These herbal medicines of veterinary importance may not be well protected, as a result can be lost due to deforestation.

Awareness creation among the local mahouts at large is important measure to preserve their indigenous medicinal plant species. Poly ethno-botanical prescriptions should be further evaluated for possible active ingredient interactions. These indigenous knowledge and practices of local mahouts should be supplemented by scientific methods to evaluate the safety, efficacy and dosage of common medicinal plants through phytochemical and antimicrobial experimentation to determine appropriate mode of delivery, drug development and dosage in pharmacological laboratory. Ethnoveterinary information was in danger of extinction because of the

current rapid changes in communities all over the world. So, ethnoveterinary medicine and knowledge should be documented and preserved for the sustainable knowledge and management for future generation throughout the world.

Acknowledgements

I am most grateful to Dr Thanda, Professor and Head of the Department of Botany, Meiktila University for her encouragements.

I would like to appreciate many thanks to Dr Thidar Myint, Professor, Department of Botany, Meiktila University for her advices.

I am especially thankful to DrKoKoLatt, Manager (Retd), Myanmar Timber Enterprise, for his help throughout the field trip. Many thanks that I would like to send to staff from Elephant Nursery Camp, for their supporting along the field trip.

Our heartfelt thanks to Dr Myat Myat Moe, Professor and Head, Department of Botany, Dagon University, for her invited to present '2nd Myanmar-Korea Conference on Useful Plants' and her permission to present this research paper

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