Ethnoveterinary plants used by the *Chiru* tribes of Manipur, Northeast India

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Cattle farming is one the most income generating occupation of the tribals of Manipur, Northeast India. *Chiru* tribe of Manipur has been depending on cattle farming for livelihood since long time back. This tribe of Manipur is repository of rich ethnoveterinary knowledge of plants. The study aims at exploring the ethnoveterinary plants associated with this particular tribe. As a result of this study, 36 plant species and genera belonging to 29 families used for treating as many as 17 ailments of domestic animals (cows, dogs, buffaloes, pigs, etc.) have been documented based on ethnoveterinary surveys (PRA and interview-questionnaire methods). The most commonly and effectively used ethnoveterinary plants are *Areca catechu* L. for treating endoparasite, *Bambusa tulda* Roxb. and *Saccharum officinarum* L. for treating retension of placenta, *Cannabis sativa* L. for treating diarrhoea and dysentery, *Achyranthes aspera* L. as galactogogue, *Elsholtzia communis* (Collett & Hemsl.) Diels for treating foot and mouth disease, *Millettia pachycarpa* Benth. for removal of insects, *Paederia foetida* L. for treating diarrhoea and dysentery, *Trigonella foenum-graecum* L. for treating haematuria. The ethnoveterinary uses of 5 plant species, viz. *Cissus adnata* Roxb. for treating bone fracture, *Drymaria cordata* (L.) Willd. ex Schult. for treating constipation, *Millettia pachycarpa* Benth. for removal of insects, *Persicaria chinensis* (L.) H. Gross for treating maggot and *Syzygium cuminii* (L.) Skeels for treating haematuria are recorded for the first time. Due to changing life style, this unexplored and undocumented knowledge is at risk.

**Keywords**: Senapati district, Ethnoflora, *Chiru* tribe

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Livestock provides a wide range of services and products including animal power and supplementary nutrition¹. Ancient ethnobotanical literature suggests that tribal and non-tribals has been using wild ethnoflora since long ago for curing various diseases and disorders in the domestic animals. The indigenous knowledge of the veterinary healthcare acquired by the traditional healers is orally transformed from one generation to other till date. Over centuries people have developed their own system of keeping animals healthy and productive using age old home remedies and associated medico religious practices which are often cheap, safe, long time tested and based on local resources and strength which are but not kept in written form. This can provide useful alternatives to animal health care system².³. The *Chirus* have their own system of tribal veterinary medicines but their knowledge is not documented properly. Due to change in livelihood and environmental degradation the traditional knowledge faces the risk of disappearing before documentation. Therefore, the present study is carried out to document this traditional knowledge.

The *Chiru* tribe is one of the *Kuki* Scheduled tribe groups of Manipur inhabiting 3 districts and 13 villages, viz. one in Churachandpur district (Charoi Khullen), ten in Senapati district (Dolang Khunou, Nungsai, Bungte Khullen, Lower Bungte, Sadu *Chiru*, Thangjing *Chiru*, Kangchup *Chiru*, Waithou, Uran *Chiru* and Chawang *Chiru*) and two in Tamenglong district (Lamdangmei and Dolang), of Manipur in different geographical regions.⁴ *Chiru* tribe originated from China⁵. *Chiru* tribe has rich traditional knowledge and rich culture, in respect of use of several indigenous wild plants various cultural practices. According to the 2001 Census, total number of population of the *Chiru* tribe in Manipur was 4679.

Ethnoveterinary uses of the plants have been studied by some workers in the world⁶-¹⁶ in India¹⁷-³⁷ and in Northeast³⁸-⁴⁰. However, no investigation has been so far done to explore the ethnoveterinary knowledge of *Chiru* tribes of Manipur. Therefore, the present study has been carried out.

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Methodology

The study area chosen consists of 5 villages in Senapati district in Manipur, i.e. Bungte Khullen, Kangchup Chiru village, Uran chiru village, Lower Bungte Khullen and Sadu Chiru village where Chiru tribe are most populated. A total of 25 field-cum survey tours were conducted throughout this 5 villages during 2009-2011. During the first field visits to each of these villages, the headmen of the villages were approached and set a meeting cum tea party along with the senior villagers of both sexes to short out experienced and knowledgeable traditional healers of domestic animals in the village. Such selected villagers were considered as key informants. There were no defined practitioners like, Maibas and Maibis as in case of ethnomedicinal practitioners in Manipur. Therefore, for this study, 10 elderly villagers identified and selected by participants in the above meetings-3 from Kangchup Chiru, 3 from Bungte Khullen, 1 from lower Bungte Khullen, 2 from Uran Chiru and 1 from Sadu Chiru, ages ranging from 40-70 yrs who lived over 40 yrs in the study area and presently practicing their knowledge and experience of ethnoveterinary were selected. Prior Informed Consent (PIC) and agreement on the sharing of information with reference to Traditional Health Practices for Domestic Animals following the norms of NEIFM (North Eastern Institute of Folk Medicine), Government of India, Department of AYUSH had been procured during the initial meetings after explaining the purpose of the study to all the participants, i.e. the headmen, villagers and key informants. Proper data was collected using Participatory Rural Appraisal (PRA) and interview-questionnaire methods⁴. In this method, informal meeting was set with the headman and older people of the villages in the headmans’ house or community halls or selected practitioners (informants) house. Home visits along with local people were made to collect the data on ethnoveterinary from each of the key informants. The key informants were interviewed with pre-set questionnaires. The questionnaire was composed of local name of the health condition, description of the health condition, affected part of the body, causes, symptoms, stages, diagnosis features as understood by healer, prognosis, details of treatment (local name of plant ingredient, scientific names, parts used, proportion used, specification for purification/collection, preparation of medicine in detail), dosage and administration (quantity, frequency of intake, duration, vehicle/adulant, precaution, etc.). Such filled up data sheets of all the key informants were compared and analysed to find out total number of diseases, plants used, effectiveness, etc. During the last visits, meeting was set with the key informants and villagers along with the local headmen to share the knowledge of all the key informants with the villagers and to moderate the slight differences in their practices. The plant species used for treatment of diseases were collected with the help of local name and direct visit to nearby forests along with the Chiru tribe. The status distribution record is also studied during these field visits. The collected plant species were identified with the help regional floras⁴²-⁴⁵ and consulting authentic herbarium at Botanical Survey of India, Kolkata and Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya and D M College of Science, Imphal, Manipur. The names were updated following ISTA list of stabilized plant names. The herbarium specimens prepared in triplicates were deposited in the Herbariums at Environment and Ecology Department Assam University, Silchar, Department of Life Sciences, Manipur University, Canchipur, Manipur and Dhanamanjurian Herbarium at D M College of Science, Imphal, Manipur. The status of the plants were recorded as per an investigation chart formulated for the purpose, regarding the information on the species if it is wild (W)/cultivated (C)/or not cultivated (nC); rare (R) or common (A). If less than 10 individual plant species were available around and within the village the species was recorded as rare otherwise as common. The mode of presentation of ethnoveterinary information follows a similar pattern, i.e. first the name of the disease is described with symptom in bracket, local name of the disease, host animals, scientific names of plants used to cure such diseases, local name of the plant species, families in bracket, used plant part, mode of treatment with doses, dosage form, frequency, duration, curability and effectiveness in parenthesis.

Results

The important and common domestic animals of this tribe are cow, pig, buffalo, goat, cat, chicken, dog, etc. The Chiru tribe generate income by raring these animals. The meat of these animals also served as an indispensable food item for the tribe. The present study showed that Chiru tribe used several ethnoveterinary practices for curing animal ailments. A total of 36 ethnoveterinary medicinal plant species of different habitat (13 shrubs, 10 trees, 7 herbs, and 6 climbers) belonging to 36 genera and 29 families of Angiosperm (Table 1) are being recorded used extensively for curing 17 ailments (such as bloat,
Table 1— Status of Ethno-veterinary plants in Manipur; nC = not cultivated, W= wild, C= cultivated, A= common, R=rare

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Plant species used (habit) and family</th>
<th>Local name</th>
<th>Diseases/disorders</th>
<th>Status record in Manipur</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Achyranthes aspera</em> L. (Herb), Amaranthaceae</td>
<td>Khujum pere</td>
<td>Galactogogue</td>
<td>W, nC, A</td>
</tr>
<tr>
<td>2</td>
<td><em>Agave americana</em> L. (Shrub), Agavaceae</td>
<td>Kewa</td>
<td>Bone fracture</td>
<td>W, nC, R</td>
</tr>
<tr>
<td>3</td>
<td><em>Aloe vera</em> (L.) Burm. f. (Herb), Liliaceae</td>
<td>Dhintakumari</td>
<td>Burns on skin</td>
<td>C, A</td>
</tr>
<tr>
<td>4</td>
<td><em>Areca catechu</em> L. (Tree), Arecales</td>
<td>Kwa</td>
<td>Endoparasite</td>
<td>C, R</td>
</tr>
<tr>
<td>5</td>
<td><em>Artemisia nilagirica</em> (C.B. Clarke) Pamp. (Shrub), Asteraceae</td>
<td>Ramsai</td>
<td>Dermatitis</td>
<td>W, nC, A</td>
</tr>
<tr>
<td>6</td>
<td><em>Azadirachta indica</em> A. Juss. (Tree), Meliaceae</td>
<td>Neem</td>
<td>Removal of insects from hair</td>
<td>C, R</td>
</tr>
<tr>
<td>7</td>
<td><em>Bambusa tulda</em> Roxb. (Tree), Poaceae</td>
<td>Sanneibi</td>
<td>Retention of placenta</td>
<td>W, C, A</td>
</tr>
<tr>
<td>8</td>
<td><em>Basella alba</em> L. (Climber), Basellaceae</td>
<td>Urok sumbal</td>
<td>Cuts and wounds</td>
<td>W, nC, A</td>
</tr>
<tr>
<td>9</td>
<td><em>Brassica campestris</em> L. (Herb), Brassicaceae</td>
<td>Hangam</td>
<td>Yoke gall</td>
<td>C, A</td>
</tr>
<tr>
<td>10</td>
<td><em>Cannabis sativa</em> L. (Shrub), Cannabaceae</td>
<td>Ganja</td>
<td>Diarrhoea and dysentery</td>
<td>W, C, A</td>
</tr>
<tr>
<td>11</td>
<td><em>Cassia fistula</em> L. (Tree), Fabaceae</td>
<td>Chouhui</td>
<td>Constipation</td>
<td>W, A</td>
</tr>
<tr>
<td>12</td>
<td><em>Centella asiatica</em> (L.) Urban (Herb), Apiceae</td>
<td>Ulendchom</td>
<td>Diarrhoea and dysentery</td>
<td>W, A</td>
</tr>
<tr>
<td>13</td>
<td><em>Cissus adnata</em> Roxb. (Climber), Vitaceae</td>
<td>Kongouyen</td>
<td>Bone fracture</td>
<td>W, C, A</td>
</tr>
<tr>
<td>14</td>
<td><em>Citrus limon</em> (L.) Burm. f. (Tree), Rutaceae</td>
<td>Champra</td>
<td>Bloat</td>
<td>C, A</td>
</tr>
<tr>
<td>15</td>
<td><em>Cucurbita maxima</em> Duchesne (Climber), Cucurbitaceae</td>
<td>Mai</td>
<td>Endoparasite</td>
<td>C, A</td>
</tr>
<tr>
<td>16</td>
<td><em>Curcuma longa</em> L. (Shrub), Zingiberaceae</td>
<td>Ai-eng</td>
<td>Mastitis</td>
<td>C, A</td>
</tr>
<tr>
<td>17</td>
<td><em>Drymaria cordata</em> Wild. ex Schutt (Herb), Carpyrophyllaceae</td>
<td>Tandon mana</td>
<td>Constipation</td>
<td>W, nC, A</td>
</tr>
<tr>
<td>18</td>
<td><em>Elsholtzia communis</em> (Collett. &amp; Hems.)(Diels) (Shrub), Lamiaceae</td>
<td>Chemshongra</td>
<td>Foot and mouth disease</td>
<td>C, A</td>
</tr>
<tr>
<td>19</td>
<td><em>Ficus racemosa</em> L. (Tree), Moraceae</td>
<td>Heipong</td>
<td>Retention of placenta</td>
<td>W, nC, A</td>
</tr>
<tr>
<td>20</td>
<td><em>Jatropha curcus</em> L. (Shrub), Euphorbiaceae</td>
<td>Awakege</td>
<td>Maggot</td>
<td>W, C, A</td>
</tr>
<tr>
<td>21</td>
<td><em>Mentha spicata</em> L. (Herb), Lamiaceae</td>
<td>Loi hidak</td>
<td>Diarrhoea and dysentery</td>
<td>C, A</td>
</tr>
<tr>
<td>22</td>
<td><em>Millettia pachycarpa</em> Benth. (Climber), Fabaceae</td>
<td>Ngavokchar</td>
<td>Removal of insects from hair</td>
<td>W, A</td>
</tr>
<tr>
<td>23</td>
<td><em>Paederia foetida</em> L. (Climber) Rubiaeae</td>
<td>Ekruijam</td>
<td>Diarrhoea and dysentery</td>
<td>W, A</td>
</tr>
<tr>
<td>24</td>
<td><em>Persicaria chinensis</em> (L.) H. Gross (Shrub), Polygonaceae</td>
<td>Tharam</td>
<td>Maggot</td>
<td>W, A</td>
</tr>
<tr>
<td>25</td>
<td><em>Pruen persica</em> (L.) Batsch. (Tree) Rosaceae</td>
<td>Chumprei</td>
<td>Maggot</td>
<td>C, A</td>
</tr>
<tr>
<td>26</td>
<td><em>Rumex maritimus</em> L. (Herb), Polygonaceae</td>
<td>Torong khongchak</td>
<td>Dermatitis</td>
<td>W, A</td>
</tr>
<tr>
<td>27</td>
<td><em>Saccharum officinimum</em> L. (Shrub), Poaceae</td>
<td>Chu</td>
<td>Retention of placenta</td>
<td>C, A</td>
</tr>
</tbody>
</table>

(Contd.)
mastitis, foot and mouth disease, dermatitis, burns, diarrhoea, dysentery, haematuria, maggots, etc.) commonly found in 6 different types of animals (cows, oxen, buffalo, pigs, cats and dogs). It was also found that all the elderly persons both man and women in the village had sound knowledge and deep understanding about the ethnoveterinary medicinal plants as they often used them for curing their common domestic animals. The details of ethnoveterinary knowledge of the tribe are described below:

**Diseases and mode of treatment**

1. **Mastitis (blocking of milk hole), Arunu nor ah areveng-abing of buffalo and cow:** Curcuma longa L., *Aieng* (Zingiberaceae) is used. 10 gm of rhizome is ground. The filtered juice is mixed with mustard oil and the mixture is rubbed on the tip of the nipple to cure mastitis. It is done 2-3 times a day for about 5 minutes each time and it is continued for a week or until cured. The disease could be cured within 1 week.

2. **Maggot (worms on wounds), Qrulung of buffalo and cow:** Prunus persica (L.) Batsch., *Chumprei* (Rosaceae) and *Persicaria chinensis* (L.) H. Gross, *Tharam* (Polygonaceae) are used. Fresh leaf paste or juice of 20-30 leaves is applied externally to the wound for killing maggots. As soon as the juice is applied died maggots from the infected part drop down. This is highly effective. The leaves of *Prunus persica* (L.) Batsch. are more effective than the leaves of *Persicaria chinensis* (L.) H. Gross. *Jatropha curcas* L., *Awakege* (Euphorbiaceae) is also used. 10-15 drops of milky latex of leaf is applied over wounds to cure maggot infection. Applying this has slow healing effect but it could heal the wounds within 15 days.

3. **Diarrhoea & dysentery (loose motion), Eh-che tasch selai buffalo and cow:** *Cannabis sativa* L., *Ganja* (Cannabaceae) is used. 15-20 fresh leaves with 10 gm of *goor* is given orally to control loose motion 1-3 times a day at intervals according to the severity of the disease regularly until cured. It takes about 2 weeks to cure. *Centella asiatica* (L.) Urban, *Ulenchom* (Apiaceae) and *Paederia foetida* L., *Ekruijam* (Rubiaceae) are also used. Whole plant of about 200 gm is given to the cattle with fodder. It controls loose motion and dysentery. *Mentha spicata* L., *Loi hidak* (Lamiaceae) is also used. Leaf juice of 20 shoots with a pinch of black salt is given orally 2-4 times per day until loose motion stops. It increases digestion and reduces gas formation. The cattle could be cured within 2 weeks.

4. **Dermatitis (loss of hair from the skin with infection or white patches and hair loss on the skin), Wunraitong, Vun rai, amo cho of buffalo and oxen:** *Sapindus mukorossi* Gaertn., *Ningsheirie,* (Sapindaceae) is used. About 5 fruit pulps are mixed with 1 litre of water and the mixture is used for bathing once per day until the infected portion heals. The cattle could be cured within 1 week. *Artemisia nilagirica* (C.B. Clarke) Pamp., *Ramsai,* (Asteraceae), *Rumex maritimus* L., *Torong khongchak,* (Polygonaceae), *Vitex negundo* L., *Urik shibi,* (Verbenaceae) are also used. Leaf juice of about 30 leaves is applied...
externally to the affected part 3-5 times per day until the normal skin is developed. Diseases could be cured within 15 - 30 days according to the intensity of the infection.

5 Anorexia (lack of appetite or stop eating fodder), Kisak-Kinek jot omak of buffalo, cow, oxen and dog and cat: Terminalia citrina (Gaertn.) Roxb. ex Fleming. Manuhei, (Combretaceae) is used. 5-7 fresh fruits are given to eat or mixed with the fodder. The cattle could be cured within 1-2 days.

6 Burning (burns on skin), Amo-me Kong-onga apat of buffalo, cow, dog and cat: Aloe vera (L.) Burm. f., Dhintakumari Tingkhang panbi (Liliaceae) is used. Leaf pulp is applied directly over burned parts. Ziziphus jujuba Mill., Boroí, (Rhamnaceae) is used. Leaf paste of 10-15 fresh leaves is applied directly on the burned part. Burns on the skin could be cured within 15 days.

7 Removal of insects from the hairs, Arikur pero of cow, dog and cat: Azadirachta indica A. Juss. Neem (Meliaceae) is used. Boiled extract of about 30 leaves is used for bathing the cattle. Insects sucking blood died and fell down from the skin. 1-2 times bathing killed the eggs, larva along with mature insects. Millettia pachycarpa Bent., Ngavokchar (Fabaceae) is also used. Stem of about 1m length is tied around the neck. It repelled the insects from colonizing on the skin and hair of the cattle but it cannot kill the insect.

8 Constipation (faeces become extra solid), Tosok sejot meying / Avon por of cow and oxen: Cassia fistula L., Chouhui (Fabaceae) is used. 4-5 fresh pods are given to the cattle once a day until normal condition is attained. Drymaria cordata (L.) Willd. ex Schutt, Tandon mana (Carryophyllaceae) is also used. Fresh leaf paste of about 30 gm is inserted in to the anus and allowed to do motion. This was done when the cattle cannot pass faeces for 2-3 days. After inserting the paste faeces discharge easily. Zingiber officinale Roscoe, Thongkho, (Zingiberaceae) is also used. Rhizome paste of about 50 gm is inserted in to the anus as in case of Drymaria cordata (L.) Willd. & Schult. and this allows easy passage of faecal materials.

9 Haematuria (urine with blood), Amujun ah thisan ajo of cow and oxen: Syzygium cuminii (L.) Skeels, Hajam, (Myrtaceae) and Trigonella foenum-graecum L., Methi, (Fabaceae) are used. About 50 gm of seed is cooked with 250 gm of rice flour and given daily to the infected cattle. Haematuria could be prevented to some extent by reducing the blood content.

10 Foot and mouth disease (infection of mouth and hooves), Abai rifit pe of buffalo, cow and dog: Elsholtzia communis (Collett. & Hemsl.) Diels, Chemshongra, (Lamiaceae) is used. About 30 whole plants are given with fodder to the infected cattle. The disease could be cured within 2 weeks.

11 Cuts and wounds, Popjoy/Fitjoy of buffalo, cow and oxen: Basella alba L., Urok sunbali, (Basellaceae) is used. Leaf paste of about 10 leaves is applied on cuts and wounds for quick healing. The infection could be cured within 1 week.

12 Bloat (gloating of stomach), Abonar rekhipape of buffalo, cow and dog: Citrus limon (L.) Burm. f., Champra, ( Rutaceae) is used. Fruit juice of 3 fruits is given to the infected cattle. Bloat could be cured within 2-3 days.

13 Endoparasite (Discharge of worms in faeces), Rorukut aom of buffalo, cow and pig: Areca catechu L., Kwa, (Arecaceae) is used. 3 nuts are soaked overnight in one glass of water and this water extract is given to the cattle. The died worms are discharged with the faeces. Cucurbita maxima Duchesne, Mai, (Cucurbitaceae) is also used. About 250 gm of chopped pumpkin flesh with seeds is added to the fodder to control the worms.

14 Retention of placenta after delivery (placenta remain inside womb after delivery), Anai rubu chobou of buffalo and cow: Saccharum officinarum L., Chu, (Poaceae) is used. 15-20 fresh leaves are given directly or mixed with fodder for easy and quick removal of placenta from the womb. Bambusa tulda Roxb., Sanneibi, (Poaceae) is also used. A bunch of fresh leaves are given for easy removal of placenta from the womb after delivery which otherwise remains for many hours.

15 Yoke gall (wounds and swelling on the neck), Ring rifit pe / Arek ah por of oxen and buffalo: Brassica rapa L., Hangam (Brassicaceae) is used. 10 drops of oil extract from the seed (mustard oil) are applied to the infected portion regularly at intervals, i.e. when previous application got dried a new application could be done. It cures the disease within 2 weeks.
Bone fracture, Aruakeh of cow, buffalo and dog: Cissus adnata Roxb., Kongouyen, (Vitaceae) and Agave americana L., Kewa, (Agavaceae) are used. Leave paste of 2-3 leaves is applied on the affected area and kept band aid until cured. It takes 1 month or more to heal.

Galactogogue (increasing the amount of milk production of cow and buffalo: Achyranthes aspera L., Khujum pere (Amaranthaceae) is used. Whole plant of about 2 kg is given to the cattle as fodder. It is highly useful. Vigna mungo (L.) Hepper, Shagol-hawai, (Papilionaceae) and Zea mays L., Chujak, (Poaceae) are also used. Fresh leaf of about 500 gm and dry grain powder is mixed with rice flour at usual daily feeding quantity and given to the cattle, these acts as galactogogue, stimulating milk flow. This is highly effective and useful.

The plant parts used for treatments are whole plants, seeds, fruits, rhizomes, latex, stem and leaves. The leaves are the most utilized plant part.

Chiru tribes have developed no well recognized mechanism for storage of these ethnoveterinary medicines. All the preparations are made fresh as and when required. This is because most of the plants are available in their immediate environment and nearby forests as these tribes are inhabited in hilly districts. Some seasonal plants like Cucurbita maxima Duchene and Zingiber officinale Roscoe, the rhizomes are stored in pits covered by soil of about 1 ft thickness while fruits of Areca catechu L., Elsholtzia communis (Collett & Hemsl.) Diels, Sapindus mukorossi Gaertn., Syzygium cumini (L.) Skeels, Terminalia citrina Roxb. ex Fleming and Trigonella foenum-graecum L. are stored as dried fruits.

Among the recorded 36 plants, the most commonly and effectively used are Areca catechu L. for treatment of endoparasite, Bambusa tulda Roxb. and Saccharum officinarum L. for treatment of retension of placenta, Cannabis sativa L. and Paederia foetida L. for treating diarrhoea and dysentery, Achyranthes aspera L. as galactogogue, Elsholtzia communis (Collett & Hemsl.) Diels for treating foot and mouth disease, Milletia pachycarpa Benth, for removal of insects, Trigonella foenum-graecum L. for treating haematuria. These treatments are well established and the tribes have strong confidence. They could not explain how these treatments are successful. They are very sure that use of these plants at the prescribed dose has no side effect as they witnessed it by practicing for generations.

Interestingly, the ethnoveterinary uses of 5 plant species, *viz.* Cissus adnata Roxb., for treating bone fracture, Drymaria cordata (L.) Wildl. ex Schult., for treating constipation, Milletia pachycarpa Benth., for removal of insects, Persicaria chinensis (L.) H. Gross for treating maggots and Syzygium cumini (L.) Skeels for treating haematuria are recorded for the first time.

The distribution status of the 36 ethnoveterinary plants used by Chiru tribe of Manipur is provided in Table 1. In this study, of the 36 spp. recorded useful, 6 spp. are purely wild, not cultivated and common while 30 spp. are common, cultivated or both wild and cultivated (Table 1). There are again 6 rare species of which 2 species are found in wild and others are cultivated.

**Discussion**

About 20 plants were reported to be used for treating race horses in Canada,

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is used by other tribes for treating different diseases. There are some plant species which are used for treating a disease by Chiru but the same plant is used by other tribes for treating different diseases. Some such plants include Centella asiatica (L.) Urb. used to treat diarrhoea and dysentery by Chiru tribe is used to cure prolapsed uterus and Jatropha curcus L. used by Chiru tribe for treating Maggot is used for healing of broken joints/bones 17; Ziziphus jujuba Mill. used to treat burns by Chiru tribe is used to treat chronic wounds 17; Azadirachta indica A. Juss. used for removal of insects from hairs by Chiru tribe is used to treat loss of appetite 20,21 healing wounds 18,22 and for treating leucorrhoea 17; Zingiber officinale Roscoe used for constipation by Chiru tribe is used for treating intestinal problem 13; mastitis and prolapsed uterus 26, saliva from mouth 26, diaphoria 26, stomach ache, pneumonia and paralysis 17 and scabies 20; Trigonella foenum-graecum L. used for treating haematoria by Chiru tribe is used for treating respiratory problems 13 and pneumonia 26; Saccharum officinarum L. used for retention of placenta by Chiru tribe is used for treating abdominal pain 26 and wound/injury 20; Cissus quadrangularis Roxb. used for treating bone fracture by Chiru tribe is used for treating wounds 27 and foot & mouth disease 17; Achyranthes aspera L. used as galactagogue by Chiru tribe is used to remove urolith in billy goats, to prevent myiasis, anthehelminthic in cattle, to expel placenta & lochia after parturition 46. Thus ethnoveterinary plants could be classified in to two categories, one with single use and the other with multiple use based on their application in the number of different diseases or treatments.

**Conclusion**

Cattle farming play an important role in the livelihood of Chiru tribes. This Ethnic group owns abundant knowledge about animal husbandry and ethnoveterinary plant remedies. In the remote places like the Chiru tribe inhabitant villages where modern medicare facilities are not available, their indigenous knowledge is the only dependable means. In general, the well recognized and very commonly used and effective healthcare methods could be utilized as these are easy to manage, readily available and cost effective. Due to changes in livelihood and environmental degradation traditional knowledge faces the risk of disappearing. There is an urgent need of comprehensive analysis and documentation of indigenous knowledge for curing animal ailments. In this regard selection of priority species for conservation is required. As already mentioned among the plants used by Chiru tribe, there are 6 rare species of which 2 species are found in wild and 4 are cultivated. The two rare and wild species are Sapindus mukorossi Gaertn. and Agave americana L. The former species needs to pay attention for mass cultivation as it has got multipurpose use. Of the 4 cultivated and rare species viz. Azadirachta indica A. Juss., Areca catechu L., Terminalia citrina Roxb. ex Fleming and Trigonella foenum-graecum L., proper attention should be given to Azadirachta indica A. Juss. and Terminalia citrina Roxb. ex Fleming as these are more significant and well recognized medicinal plants while Areca catechu L. and Trigonella foenum-graecum L. are rare because they are not commonly cultivated in this region despite of their availability in plenty in the surrounding states like Assam, Meghalaya, etc. The plants with multiple uses with records of high effectiveness in treatment should be given priority for conservation rather than the plants with single use and less effective.

Conservation of ethnoveterinary plants could be done by introducing the priority species in the home gardens in particular and by establishing district label ethnoveterinary Botanical Gardens in general. At the same time establishing of a scientific but easy technique for preservation of these plants in the form of readymade medicine would be beneficial for these tribes. At the present scenario, it is required to
investigate in detail the active compounds present in these plants. The plants with multiple uses and highly effective could be selected for screening to identify active compounds and develop new drugs. Further research on these plants will surely help in the development of effective medicines for cattle farming.

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