



## News Letter

## The healing art of traditional medicines in Myanmar

Suresh AWALE,<sup>a)</sup> Thein Zaw LINN,<sup>b)</sup> Myint Myint THAN,<sup>b)</sup> Thein SWE,<sup>b)</sup>  
Ikuo SAIKI,<sup>a)</sup> Shigetoshi KADOTA<sup>\*a)</sup>

<sup>a)</sup>Institute of Natural Medicine, University of Toyama, 2630 Sugitani, Toyama 930-0194, Japan. <sup>b)</sup>Department of Traditional Medicine, Ministry of Health, Union of Myanmar. (Accepted February 2, 2006.)

**Traditional medicines are an integral part of people's culture and are used extensively by the peoples in developing countries for their primary health care. A rich heritage of traditional medical knowledge and the use of plants as medicines still exist in Myanmar which have been inherited from earlier generations. However, many areas in Myanmar are now experiencing rapid changes. Traditional knowledge as well as plants that the traditional healers rely upon are being lost at an alarming rate. Therefore, it is important that immediate steps be taken to protect the important source of traditional knowledge as well as medicinal plant diversity. This paper highlights information and observations on the art of healing performed by the traditional medicine practitioners in Myanmar, their success stories, together with an inventory of some medicinal plants, and traditional knowledge pertaining to their use, including preparation and administration.**

### 1. Introduction

Throughout the world, from the very earliest times of prehistory, humans have used plants that they found near their villages as medicines. For centuries of experimentation that was done directly on patients, human societies acquired the knowledge of medicinal value of plants. Once a specific plant was discovered to be therapeutic, this knowledge was passed on to others as folk medicine. As a result, thousands of herbs, plants and preparations have been handed down to contemporary practitioners in many other parts of the world. Even today in most of the rural areas in developing countries, people are depending on local traditional healing systems for their primary health care.

The art of traditional healing has very deep roots in Asian cultures and folklore, especially in China and India. The knowledge of traditional medicine (TM) has attained a well organized form in both of these countries, and was systematically recorded and employed as the traditional Chinese medicine in China and as Ayurveda in India. In many other countries of Asia, the TM systems seem to be influenced and modified to their cultural needs from these two main systems. Japanese "Kampo" medicine is one example, which stemmed from traditional Chinese medicine and was modified to Japanese culture and norms.

Myanmar, a country with strong cultural heritage, is the largest in South-East Asia which shares the borders with Bangladesh, India, China, Laos and Thailand and occupies the total land area of 676,577 sq. km., stretching 2,090 km from north to south and over 925 km from east to west. Owing to diversified geographical and climatic variation, this country is rich in diversified flora and fauna and has

unique TM culture, which plays an indispensable role in promoting the health care system. The country possesses more than 100 ethnic groups with their own dialects and traditions.<sup>1)</sup> The major races are the Bamar, Chin, Kachin, Shan, Kayah, Kayin, Mon and the Rakhine. It is a country with predominant Buddhist religion which has influence in daily lifestyle as well as in the art of traditional healing. The TM system in this country has emerged as a distinctive system, some of which is endemic only to particular ethnic group and culture, and are still hidden from this modern world. However, the traditional knowledge as well as the plants that the traditional healers rely upon are being lost at an alarming rate in Myanmar. Therefore, it is important that immediate steps be taken to protect the important source of traditional knowledge as well as medicinal plant diversity. In an attempt to conserve TM knowledge, it is necessary that inventories of plants with therapeutic value are carried out, and the knowledge related to their use documented in systematic studies.

As a part of our continued study program on the status of TM system in Southeast Asia<sup>2-10)</sup> supported by the Ministry of Education, Culture, Sports, Science and Technology (Monbukagakusho), recently we visited the remote areas of Myanmar, and interacted with the local healers in Rakhine state (Thandwe Tsp, Sittwe Tsp.), Ayeyarwady division (Hinthada Tsp., Patheingyi Tsp.) and Yangon division (Yangon city) (Fig. 1), and studied about their treatment style, efficacy, present status etc. In this report, we present the brief overview of the information gathered during face to face interviews, the overall status of TM, the hidden art of healing techniques performed by the practitioners, and their success stories together with an inventory of the some medicinal plants, and the traditional knowledge pertaining to their use, including processing, preparation and administration (Table 1).

\*To whom correspondence should be addressed. e-mail : kadota@inm.u-toyama.ac.jp

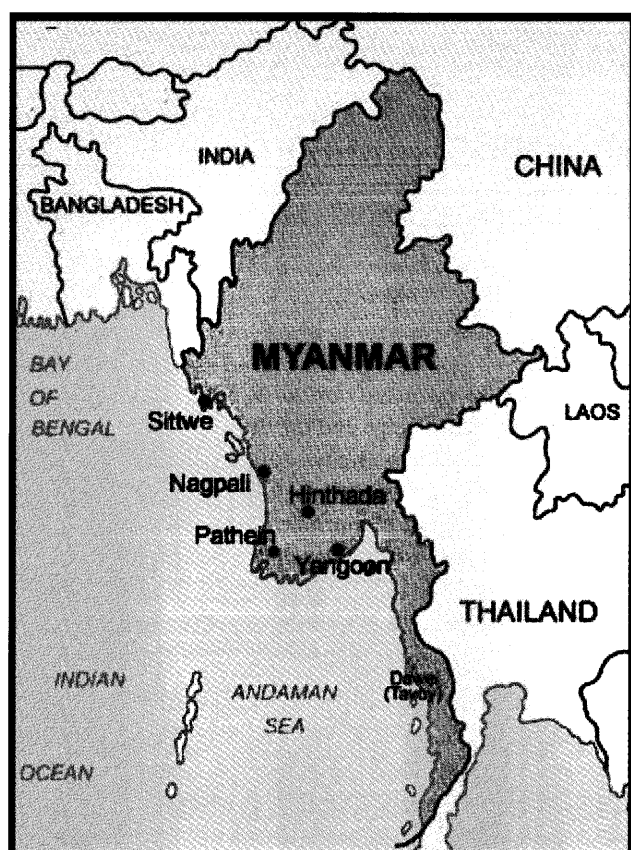


Figure 1. Map of study sites in Myanmar

## 2. Methodology

Fieldwork for this study was carried out during November 2004. Information was collected during face-to-face interviews using guided questionnaires prepared by us, direct observations, and transects walks. A pilot study lasting two weeks was conducted at the very beginning of the study. Two authors in this study (MMT and TZL)<sup>11)</sup> were Myanmar nationals, who helped in the identification of key informants based on their reputation, and aided in interpreting the cultural norms and translating hidden meanings behind the said expressions during interviews. Through interviews and discussion, information about many of the plants used in their medicine was gathered. They were asked how to diagnose a particular malady, what kind of remedies they use for what type of disorders as well as for a detailed explanation about their ways of treatment. Each practitioner was also asked about the origin of their traditional knowledge, incorporation of astrology in their care. The interviews were supplemented by direct observations to their treatment and interaction with the patients.

## 3. Interview with traditional healers

### 3.1. Rakhine state:

Rakhine state is situated on the western coast of Myanmar. It is located approximately between latitudes 17°30' north and 21°30' north and east longitudes 92°10' east and 94°50' east. Its area is 36,762 km<sup>2</sup>. The major ethnic groups in this state are Rakhine and Rohingyas. The

Table 1. Lists of medicinal plants collected from Myanmar

| No. | Local name         | Scientific name                            | Family          | Parts used  | Usage  | Place of collection |
|-----|--------------------|--|-----------------|-------------|--|---------------------|
| 1.  | Taw-kyat-mauk      | <i>Actinopteris dichotoma</i> Bedd.        | Polypodiaceae   | Root        | Digestion                                    | Sittwe              |
| 2.  | Su-la-na-pha       | <i>Alhagi Camelorum</i> Fisch.             | Papilionaceae   | Whole plant | Urinary disorders and hot diseases           | Patheingyi          |
| 3.  | Pade-gaw           | <i>Alpinia conchigera</i> Griff.           | Zingiberaceae   | Rhizome     | Cold, gout, Digestion                        | Sittwe              |
| 4.  | Sa-muk             | <i>Apium graveolens</i> L.                 | Umbelliferae    | Seed        | Digestion                                    | Patheingyi          |
| 5.  | Pauk               | <i>Butea frondosa</i> Roxb.                | Papilionaceae   | Flower      | Liver and hot disease                        | Patheingyi          |
| 6.  | Pauk-new-oat       | <i>Butea superba</i> Roxb.                 | Fabaceae        | Rhizome     | To increase breast size and estrogen hormone | Patheingyi          |
| 7.  | Tsu-ban            | <i>Carum copticum</i> Benth.               | Lamiaceae       | Seed        | Digestion                                    | Patheingyi          |
| 8.  | Samon-byu          | <i>Carthamus tinctorius</i> L.             | Asteraceae      | Seed        | Heart diseases and paralysis                 | Patheingyi          |
| 9.  | Mesali             | <i>Cassia siamea</i> , <i>Senna siamea</i> | Caesalpiniaceae | Root        | Insomnia, sedative and heart disease         | Patheingyi          |
| 10. | Na- nwin           | <i>Curcuma longa</i>                       | Zingiberaceae   | Rhizome     | Digestion and liver disease                  | Patheingyi          |
| 11. | Chin-saw-ga        | <i>Cydonia cathayensis</i> Hemsl.          | Rosaceae        | Fruit       | Digestion and to lower cholesterol           | Patheingyi          |
| 12. | Nwar-myay-yin      | <i>Cyperus scariosus</i> Br.               | Cyperaceae      | Rhizome     | Cancer                                       | Sittwe              |
| 13. | Gon-nyin           | <i>Entada pursaetha</i> DC.                | Mimosaceae      | Seed        | Malaria                                      | Sittwe              |
| 14. | Samon-saba         | <i>Foeniculum vulgare</i>                  | Apiaceae        | Seed        | Digestion                                    | Patheingyi          |
| 15. | Mi-kyaung-kun-phat | <i>Hygrophila phlomoides</i> Nees.         | Acanthaceae     | Seed        | Mi-kyaung-kun-phat                           | Sittwe              |
| 16. | Tabin-shwe-hti     | <i>Jatropha podagrica</i> Hook.            | Euphorbiaceae   | Root        | Easy child birth                             | Sittwe              |
| 17. | Kunsa-gamon        | <i>Kaempferia galanga</i>                  | Zingiberaceae   | Rhizome     | Blood circulation and heart disease          | Patheingyi          |

|     |                          |   |                |             |   |         |
|-----|--------------------------|---|----------------|-------------|---|---------|
| 18. | Shan-pan-oot             | <i>Kaempferia pulchra</i> Ridl.   | Zingiberaceae  | Rhizome     | Gout, Diabetes, Ulcer   | Pindaya |
| 19. | Pin-gu-hteik-peik        | <i>Leucas cephalotes</i> Spreng   | Lamiaceae      | Whole plant | Antitoxic   | Pathein |
| 20. | Samon-ni                 | <i>Lepidium sativum</i> , <i>Brassica juncea</i>                              | Brassicaceae   | Seed        | Digestion   | Pathein |
| 21. | Khayar-ni                | <i>Lochnera rosea</i> Reichb.<br>Syn. <i>Vinca rosea</i> Linn.                | Apocynaceae    | Stem        | Hypertension  | Pathein |
| 22. | Tha-but-khar             | <i>Luffa aegyptiacat amara</i> Roxb.  | Cucurbitaceae  | Fruit       | Hepatitis   | Sittwe  |
| 23. | Gangaw                   | <i>Mesua Ferra</i> Linn.  | Guttiferae     | pollen      | Tonic, heart disease and anaemia  | Pathein |
| 24. | Ega-yit                  | <i>Millingtonia hortensis</i> Linn.   | Bignoniaceae   | Stem        | Hypertension  | Pathein |
| 25. | Pauk-net                 | <i>Mucuna macrocarpa</i> Wall.  | Fabaceae       | Wood        | Ulcer   | Sittwe  |
| 26. | Kant-ba-lu               | <i>Nardostachys jatamansi</i> DC.   | Valerianaceae  | Rhizome     | Heart diseases  | Pathein |
| 27. | Indaing-say-ni           | <i>Ochna fruticulosa</i> Kurz.  | Ochnaceae      | Root        | Urinary disorder, Gout  | Sittwe  |
| 28. | Sa-yo                    | <i>Piper chaba</i> Hunter.  | Piperaceae     | Root        | Digestion   | Sittwe  |
| 29. | Nga-yok-kaung            | <i>Piper nigrum</i> L.  | Piperaceae     | Seed        | Digestion   | Pathein |
| 30. | Maung-ma-khaw-u          | <i>Plectranthus tuberosus</i> Bl.   | Libiatae       | Root        | Tonic   | Pathein |
| 31. | Pyin-sakar-ni-thee       | <i>Quercus infectoria</i> Oliv.   | Fagaceae       | Fruit       | Digestion, Antibacterial, Urinary disorder, Inflammation of gums, Ulcer | Sittwe  |
| 32. | Bonma-yaza               | <i>Rauwolfia serpentine</i> L.  | Apocynaceae    | Root        | Hypertension  | Pathein |
| 33. | Pan-nu                   | <i>Saussurea lappa</i> , <i>Hemistrepia lyrata</i> , <i>Prunus cerasoides</i> | Rosaceae       | Rhizome     | Tonic   | Pathein |
| 34. | Nan-tha-byu              | <i>Santalum album</i> Linn.   | Santalaceae    | Wood        | Nan-tha-byu   | Pathein |
| 35. | Lauk-thay                | <i>Tadehagi triquetrum</i>  | Fabaceae       | Leaf        | Diabetes, Wristache, Heart disease                                      | Sittwe  |
| 36. | Upa-thaka                | <i>Tylophora asthamatica</i> W & A.   | Asclepiadaceae | Stem        | Blood purification and heart diseases                                   | Sittwe  |
| 37. | Hsay-lulin               | <i>Urena rigida</i> Wall.   | Malviceae      | Root        | Urinary disorder, Ulcer   | Sittwe  |
| 38. | Meik-thalin              | <i>Zingiber cassumunar</i> Roxb.  | Zingiberaceae  | Rhizome     | Gout  | Pindaya |
| 39. | Ginger                   | <i>Zingiber officinale</i> Roscoe   | Zingiberaceae  | Rhizome     | Digestion   | Pathein |
| 40. | Hsay-myyit-bayin         | NI  | NI             | Root        | Asthma, Tuberculosis, Gout, Cancer, Gastric, Hypertension               | Sittwe  |
| 41. | Ngan-Wah                 | NI  | NI             | Root        | Antitoxic   | Sittwe  |
| 42. | Sabahgyi-thee-chay-myint | NI  | NI             | Root        | Cancer  | Sittwe  |
| 43. | Na-ga-mauk-thein         | NI  | NI             | Root        | Cancer  | Sittwe  |
| 44. | Hsay-myin-khwa           | NI  | NI             | Stem        | Urinary disorders and hot diseases                                      | Pathein |
| 45. | Taung-kyar-oot           | NI  | NI             | Rhizome     | Tonic and Insomnia  | Pathein |
| 46. | Pi-tauk-mho              | NI  | NI             | Mould       | Heart disease   | Pathein |
| 47. | Yoc-ton                  | NI  | NI             | Stem        | Blood purification  | Pathein |
| 48. | Gon-khar                 | NI  | NI             | Stem        | Cancer  | Pathein |
| 49. | Gamon-net                | NI  | NI             | Rhizome     | Cancer  | Pathein |
| 50. | Shwe-ta-hle-kon-kar      | NI  | NI             | Stem        | Cancer  | Sittwe  |
| 51. | Wa-wound-chin            | NI  | NI             | Root        | Cancer  | Thaton  |

NI: not identified

remaining ethnic groups are Mro, Kham, Kaman Muslim, Dienet, Marmagri and a few others. The majority of people in this state are Buddhists. Sittwe is the capital of Rakhine state. During colonial times, Sittwe had a bad reputation for malaria and cholera. In the present study, Sittwe Tsp and Thandwe Tsp of Rakhine state has been selected for field survey.

### 3.1.1 Sittwe Township:

Mrs. Daw Thein Oo from Sittwe has 12 years of experience in treating menstrual disorders, white discharges and post menopausal disorders. She has obtained a formal license to practice TM from the Department of Traditional Medicine. According to her, *Aloe vera*, Jaggery and sesame oil combined with decoction of *Alstonia scholaris* R. Br. is highly effective for menstrual and post menopausal

disorders.

Mr. U Tun Oo Kyaw, a 68 year old traditional practitioner from Sittwe Tsp. has 48 years of experience in treating fever, diarrhea and dysentery. He acquired the medical knowledge from the monks and through generation transfer.

According to him, about 70% of the people in Sittwe rely on traditional medicines. The antimalarial drug formulation called Ngan-war-kyi-kyaw (Table 3) is his personal formulation for the treatment of malaria.

**Table 2.** List of Some commonly used Traditional Medicine Formulations:

**1) TMF-2: (Lay-myo-shit-hsai-hsay)**

**Usage:** Indigestion, flatulence, wind disorder, coughs, congestion in the chest

| Composition           | Scientific name                    | Family        | Parts used |
|-----------------------|------------------------------------|---------------|------------|
| <b>Plant origin</b>   |                                    |               |            |
| 1) Phar-lar-ngai      | <i>Elettaria cardamomum</i> Maton. | Zingiberaceae | Seed       |
| 2) Lay-hnyin          | <i>Syzygium aromaticum</i> L.      | Myrtaceae     | Flower     |
| 3) Kut-ka-rar         | <i>Anacyclus pyrethrum</i> DC.     | Asteraceae    | Root       |
| 4) Nwei-gyo           | <i>Glycyrrhiza glabra</i> L.       | Fabaceae      | Stem       |
| <b>Mineral origin</b> |                                    |               |            |
| 5) Pa-yoke            | Camphor                            |               |            |
| 6) Has-boke           | Black salt                         |               |            |
| 7) Zar-wet-thar       | Ammonium chloride                  |               |            |
| 8) Thein-daw          | Sodium chloride                    |               |            |

**2) TMF-3: (Hsa-hset-da-bah-hsay)**

**Usage:** Indigestion, wind disorder, urinary disorder

| Composition           | Scientific name                                       | Family        | Parts used |
|-----------------------|---|---------------|------------|
| <b>Plant origin</b>   |   |               |            |
| 1) Zar-deik-pho       | <i>Myrtica fragrans</i> Houtt.                        | Myrustaceae   | Fruit      |
| 2) Gyin               | <i>Zingiber officinale</i> Roscoe.                    | Zingiberaceae | Rhizome    |
| <b>Mineral origin</b> |   |               |            |
| 3) Ma-phauk-hton      | Calcium oxide   |               |            |
| 4) Za-wet-thar        | Ammonium chloride                                     |               |            |
| 5) Hsaw-dar           | Sodium bicarbonate                                    |               |            |
| 6) Thein-daw          | Sodium chloride                                       |               |            |
| 7) Hsa-boke           | Mixture of baked sodium, magnesium and iron sulphates |               |            |
| 8) Bin-ga-li-hsa-khah | Magnesium sulphate                                    |               |            |
| 9) Kyauk-chin         | Potassium aluminium sulphate                          |               |            |
| 10) Yan-zein          | Potassium nitrate                                     |               |            |
| 11) Si-thsat-pyar     | Crude sodium carbonate                                |               |            |

**3) TMF-4: (Pan-nar-chwe-rai-hsay)**

**Usage:** Wind disorder, Urinary disorder, Asthma, Indigestion

| Composition           | Scientific name         | Family     | Parts used |
|-----------------------|-------------------------|------------|------------|
| <b>Plant origin</b>   |                         |            |            |
| 1) Kun-yut            | <i>Piper betle</i> L.   | Piperaceae | Leaf       |
| 2) Than-pa-ya-thee    | <i>Citrus medica</i> L. | Rutaceae   | Fruit      |
| <b>Mineral origin</b> |                         |            |            |
| 3) Sein-ni-myin-thwa  | Arsenic                 |            |            |
| 4) Hsa                | Sodium chloride         |            |            |

**4) TMF-7: (Nwei-gyo-ke-chound-zoe-pyauk-hsay)****Usage:** Cough, indigestion

| Composition           | Scientific name                      | Family        | Parts used |
|-----------------------|--------------------------------------|---------------|------------|
| <b>Plant origin</b>   |                                      |               |            |
| 1) Samon-sa-bah       | <i>Foeniculum vulgare</i> Mill.      | Apiaceae      | Fruit      |
| 2) Samon-byu          | <i>Carum copticum</i> Benth. & Hook. | Umbelliferae  | Fruit      |
| 3) Samon-nyo          | <i>Apium graveolens</i> L.           | Umbelliferae  | Seed       |
| 4) Samon-ni           | <i>Lepidium sativum</i> L.           | Cruciferae    | Seed       |
| 5) Nan-tha-phyu       | <i>Santalum album</i> L.             | Santalaceae   | Wood       |
| 6) Kun-sa-ga-mon      | <i>Kaempferia galanga</i> L.         | Zingiberaceae | Rhizome    |
| 7) Nwei-gyo           | <i>Glycyrrhiza glabra</i> L.         | Fabaceae      | Stem       |
| <b>Mineral origin</b> |                                      |               |            |
| 8) Let-chah           | Borax                                |               |            |
| 9) Za-wet-thar        | Ammonium chloride                    |               |            |
| 10) Thein-daw         | Sodium chloride                      |               |            |

**5) TMF-11: (Mok-ke-hsay)****Usage:** Urinary disorder, wind disorder, gout

| Composition           | Scientific name                      | Family        | Parts used |
|-----------------------|--------------------------------------|---------------|------------|
| <b>Plant origin</b>   |                                      |               |            |
| 1) Samon-sa-bah       | <i>Foeniculum vulgare</i> Mill.      | Apiaceae      | Fruit      |
| 2) Samon-byu          | <i>Carum copticum</i> Benth. & Hook. | Umbelliferae  | Fruit      |
| 3) Samon-nyo          | <i>Apium graveolens</i> L.           | Umbelliferae  | Seed       |
| 4) Samon-ni           | <i>Lepidium sativum</i> L.           | Cruciferae    | Seed       |
| 5) Zar-deik-pho       | <i>Myritica fragrans</i> Houtt.      | Myristicaceae | Fruit      |
| 6) Lay-hnyin          | <i>Syzygium aromaticum</i> L.        | Fabaceae      | Flower     |
| 7) Samon-net          | <i>Nagella stiva</i> L.              | Ranunculaceae | Seed       |
| 8) Mok-kah            | <i>Aloe vera</i> L.                  | Liliaceae     | Leaf       |
| <b>Mineral origin</b> |                                      |               |            |
| 9) Kyauk-chin         | Potassium aluminium sulphate         |               |            |
| 10) Za-wet-thar       | Ammonium chloride                    |               |            |
| <b>Marine origin</b>  |                                      |               |            |
| 11) Kyauk-khet        | <i>Acropora concinna</i>             |               |            |
| 12) Kyauk-set         | <i>Goniopora stutchunyi</i>          |               |            |
| 13) Kyauk-pwint       | <i>Acropora brueggemani</i>          |               |            |
| 14) Kyauk-myoke       | <i>Goniopora lobata</i>              |               |            |
| 15) Leik-kyauk-hsoo   | <i>Trigon zeygi</i>                  |               |            |
| 16) Kyway-boke        | <i>Cypreaa eglantina</i>             |               |            |

**6) TMF-13: (Weik-tan-bi-ta-hsay-byu)****Usage:** Diarrhoea, fever, headache, urinary disorder, indigestion, food poison

| Composition           | Scientific name              | Family    | Parts used |
|-----------------------|------------------------------|-----------|------------|
| <b>Plant origin</b>   |                              |           |            |
| 1) Melt-lin-gyin      | <i>Adansonia digitata</i> L. | Malvaceae | Fruit      |
| <b>Mineral origin</b> |                              |           |            |
| 2) Yan-zein           | Potassium nitrate            |           |            |
| 3) Let-char           | Borax                        |           |            |

- 4) Kant-ku-zan Talc  
 5) Kyauk-chin Potassium aluminium sulphate

**Marine origin**

- 6) Kyauk-net *Acropora concinna*  
 7) Kyauk-set *Goniopora stutchunyi*  
 8) Kyauk-pwint *Acropora brueggemani*  
 9) Kyauk-myoke *Goniopora lobata*

**7) TMF-16: (Apu-nyein-thway-hsay)**

**Usage:** Fever, bowel disorder, giddiness, heart palpitation, insomnia, jaundice, cold and cough, smallpox and measles, heat prostration

| Composition           | Scientific name                    | Family        | Parts used |
|-----------------------|------------------------------------|---------------|------------|
| <b>Plant origin</b>   |                                    |               |            |
| 1) Zar-deik-pho       | <i>Myristica fragrans</i> Houtt.   | Myristicaceae | Fruit      |
| 2) Pan-nu             | <i>Hemistrepta lyrata</i> Bunge.   | Asteraceae    | Root       |
| 3) Pan-ma             | <i>Anneslea fragrans</i> Wall.     | Theaceae      | Root       |
| 4) Kattara thinchay   | <i>Pistacia integerrima</i> Stew.  | Anacardiaceae | Wood       |
| 5) Ziyar              | <i>Cuminum cyminum</i> L.          | Apiaceae      | Fruit      |
| 6) Hsay-pazun-doke    | <i>Unidentified</i>                | -             | Rhizome    |
| 7) Phar-lar-gai       | <i>Elettaria cardamomum</i> Maton. | Zingiberaceae | Seed       |
| 8) Yoe-tone           | <i>Unidentified</i>                | -             | Stem       |
| 9) Chounggyar         | <i>Unidentified</i>                | -             | Stem       |
| 10) Can-da-ku-phyu    | <i>Unidentified</i>                | -             | Bark       |
| 11) Cay-ma-khan       | <i>Jatropha multifida</i> L.       | Euphorbiaceae | Stem       |
| 12) Lay-hnyin         | <i>Syzygium aromaticum</i> L.      | Myrtaceae     | Flower     |
| 13) Danda-gu-nee      | <i>Dracaena angustifolia</i> Roxb. | Dracaenaceae  | Wood       |
| 14) Nan-tha-phyu      | <i>Santalum album</i> L.           | Santalaceae   | Wood       |
| 15) Nan-tha-nee       | <i>Pterocarpus santalinus</i> L.   | Fabaceae      | Wood       |
| 16) Nwei-gyo          | <i>Glycyrrhiza glabra</i> L.       | Fabaceae      | Stem       |
| 17) Gan-gaw-wuth-sen  | <i>Mesua ferrea</i> L.             | Hypericaceae  | Stamen     |
| <b>Mineral origin</b> |                                    |               |            |
| 18) Tha-gyar-khai     | Sucrose                            |               |            |
| <b>Animal origin</b>  |                                    |               |            |
| 19) Kyant-thway       | Blood of <i>Babulus babulum</i>    |               |            |

**8) TMF-17: (Thway-hsay-neegy)**

**Usage:** Blood and bile disorder

| Composition          | Scientific name                   | Family        | Parts used |
|----------------------|-----------------------------------|---------------|------------|
| <b>Plant origin</b>  |                                   |               |            |
| 1) Zar-deik-pho      | <i>Myristica fragrans</i> Houtt.  | Myristicaceae | Fruit      |
| 2) Lay-hnyin         | <i>Syzygium aromaticum</i> L.     | Myrtaceae     | Flower     |
| 3) Pan-nu            | <i>Hemistrepta lyrata</i> Bunge.  | Asteraceae    | Root       |
| 4) Kya-zoot          | <i>Terminilia citrine</i> Roxb.   | Combretaceae  | Fruit      |
| 5) Pan-ma            | <i>Anneslea fragrans</i> Wall.    | Theaceae      | Wood       |
| 6) Kattara-thin-chay | <i>Pistacia integerrima</i> Retz. | Anacardiaceae | Leaf gall  |
| 7) Nan-tha-phyu      | <i>Santalum album</i> L.          | Santalaceae   | Wood       |
| 8) Nan-tha-nee       | <i>Pterocarpus santalinus</i> L.  | Fabaceae      | Wood       |
| 9) Phar-lar-ngei     | <i>Elettaria cardamomum</i> Maton | Zingiberaceae | Seed       |

|                           |                                    |                  |         |
|---------------------------|------------------------------------|------------------|---------|
| 10) Kat-pho               | <i>Myric anagi</i> Thumb.          | Myricaceae       | Bark    |
| 11) Nwei-gyo              | <i>Glycyrrhiza glabra</i> L.       | Fabaceae         | Stem    |
| 12) Hsaung-may-gah        | <i>Picrohriza kurroa</i> Royle.    | Scrophulariaceae | Root    |
| 13) Hsay-pa-zon-doke      | <i>Unidentified</i>                | -                | Rhizome |
| 14) Phone-ma-thein        | <i>Blumea balsamifera</i> (L.) DC. | Asteraceae       | Flower  |
| 15) Padonmakyar - wut-san | <i>Nelumbo nucifera</i> Gaertn.    | Nelumbonaceae    | Stamen  |
| 16) Kyar-thee-hsan        | <i>Nelumbo nucifera</i> Gaertn.    | Nelumbonaceae    | Kernel  |
| 17) Gangaw-wut-san        | <i>Mesua ferrea</i> L.             | Hypericaceae     | Stamen  |

**Mineral origin**

|              |                 |
|--------------|-----------------|
| 18) Payoke   | Camphor         |
| 19) Theindaw | Sodium chloride |

**Animal origin**

|                 |                                 |
|-----------------|---------------------------------|
| 20) Kyant-thway | Blood of <i>Babulus babulum</i> |
|-----------------|---------------------------------|

**9) TMF-25: (Matai-myinmhogon Hsay)****Usage:** Bowel disorders, indigestion, flatulence, dysentery, fevers , oligurie

| Composition  | Scientific name  | Family                      | Parts used      |
|--|--|-----------------------------|-----------------|
| <b>Plant origin</b>  |  |                             |                 |
| 1) Zar-deik-pho  | <i>Myristica fragrans</i> Houtt.                             | Myrustucaceae               | Fruit           |
| 2) Lay-hnyin   | <i>Syzygium aromaticum</i> L.                                | Myrtaceae                   | Flower          |
| 3) Samon-net   | <i>Nigella stiva</i> L.                                      | Ranunculaceae               | Seed            |
| 4) Kattara- thin-chay  | <i>Pistacia integerrima</i> Retz.                            | Anacardiaceae               | Leaf gall       |
| 5) Pan-nu  | <i>Hemistrepta lyrata</i> Bunge.                             | Asteraceae                  | Wood            |
| 6) Kuk-ka-rar  | <i>Anacyclus pyrethrum</i> DC.                               | Asteraceae                  | Root            |
| 7) Pan-ma  | <i>Anneslea fragrans</i> Wall.                               | Theaceae                    | Wood            |
| 8) Hsaung-may-gah  | <i>Picrohriza kurroa</i> Royle.                              | Scrophulariaceae            | Root            |
| 9) Sular-na-phar   | <i>Heracleum candicans</i> Wall.                             | Apiaceae                    | Seed            |
| 10) Trikadoke (Three fiery substances of cayenne pepper, long pepper and ginger) | <i>Zingiber officinale</i> Roscoe.<br><i>Piper nigrum</i> L. | Zingiberaceae<br>Piperaceae | Rhizome<br>Seed |
| <b>Mineral origin</b>  |  |                             |                 |
| 11) Theindaw   | Sodium chloride  |                             |                 |

**10) TMF-29: (Tha-ba-zay-ya-hsay-zat-kyee)****Usage:** Inflammatory, Asthma, Fever, Malaria, Menstrual disorder

| Composition         | Scientific name                      | Family        | Parts used |
|---------------------|--------------------------------------|---------------|------------|
| <b>Plant origin</b> |                                      |               |            |
| 1) Nga-yok-kaung    | <i>Piper nigrum</i> L.               | Piperaceae    | Fruit      |
| 2) Peik-chinn-thee  | <i>Piper longum</i> L.               | Piperaceae    | Fruit      |
| 3) Gyin             | <i>Zingiber officinale</i> Roscoe.   | Zingiberaceae | Rhizome    |
| 4) Samon-sa-bah     | <i>Foeniculum vulgare</i> Mill.      | Apiaceae      | Fruit      |
| 5) Samon-byu        | <i>Carum copticum</i> Benth. & Hook. | Umbelliferae  | Fruit      |
| 6) Samon-nyo        | <i>Apium graveolens</i> L.           | Umbelliferae  | Seed       |
| 7) Samon-ni         | <i>Lepidium sativum</i> L.           | Cruciferae    | Seed       |
| 8) Samon-byu        | <i>Carum copticum</i> Benth. & Hook. | Umbelliferae  | Stem       |
| 9) Phar-lar-ngei    | <i>Elettaria cardamomum</i> Maton.   | Zingiberaceae | Seed       |
| 10) Lay-hnyin       | <i>Syzygium aromaticum</i> L.        | Myrtaceae     | Flower     |
| 11) Peik-chinn-myit | <i>Piper longum</i> L.               | Piperaceae    | Root       |
| 12) Kya-zoot        | <i>Terminalia citrine</i> Roxb.      | Combretaceae  | Fruit      |

|                        |                                    |               |        |
|------------------------|------------------------------------|---------------|--------|
| 13) Thit-gya-boe       | <i>Cinnamomum zeylanicum</i> Nees. | Lauraceae     | Bark   |
| 14) Zar-deik-pho-thee  | <i>Myristica fragrans</i> Houtt.   | Myrustucaceae | Fruit  |
| 15) Zar-deik-pho-pwint | <i>Myristica fragrans</i> Houtt.   | Myrustucaceae | Flower |
| 16) Ka-ra-way ywet     | <i>Cinnamomum inunctum</i> Meissn. | Lauraceae     | Leaf   |
| 17) Ka-ra-way-thee     | <i>Cinnamomum inunctum</i> Meissn. | Lauraceae     | Fruit  |
| <b>Mineral origin</b>  |                                    |               |        |
| 18) Let-char           | Borax                              |               |        |
| 19) Pa-yoke            | Camphor                            |               |        |

**11) TMF-30: (Ma-ha-kat-kaw-li-hsay)****Usage:** Menstrual disorder, wind disorder, diarrhoea, constipation, headache

| Composition            | Scientific name                      | Family           | Parts used |
|------------------------|--------------------------------------|------------------|------------|
| <b>Plant origin</b>    |                                      |                  |            |
| 1) Ka-ra-way-thee      | <i>Cinnamomum inunctum</i> Meissn.   | Lauraceae        | Fruit      |
| 2) Ka-ra-way-ywet      | <i>Cinnamomum inunctum</i> Meissn.   | Lauraceae        | Leaf       |
| 3) Samon-net           | <i>Nigella stiva</i> L.              | Ranunculaceae    | Seed       |
| 4) Phar-lar            | <i>Elettaria cardamomum</i> Maton.   | Zingiberaceae    | Seed       |
| 5) Samon-sa-bah        | <i>Foeniculum vulgare</i> Mill.      | Apiaceae         | Fruit      |
| 6) Samon-byu           | <i>Carum copticum</i> Benth. & Hook. | Umbelliferae     | Fruit      |
| 7) Samon-nyo           | <i>Apium graveolens</i> L.           | Umbelliferae     | Seed       |
| 8) Samon-ni            | <i>Lepidium sativum</i> L.           | Cruciferae       | Seed       |
| 9) Tet-myo-nga-bah     | Unidentified                         |                  |            |
| 10) Peik-chin-myt      | <i>Piper longum</i> L.               | Piperaceae       | Root       |
| 11) Pyin-nyar-lin-kar  | Unidentified                         |                  |            |
| 12) Nga-phone-hsay     | <i>Aristolochia roxburghiana</i>     | Aristolochiaceae | Root       |
| 13) U-pa-tha-ka        | <i>Tylophora asthamatica</i> W & A.  | Asclepiadaceae   | Root       |
| 14) Sin-tha-ma-nwe     | <i>Tinospora cordifolia</i> Miers    | Menispermaceae   | Stem       |
| 15) Thit-gya-boe       | <i>Cinnamomum zeylanicum</i> Nees.   | Lauraceae        | Bark       |
| 16) Zar-deik-pho-thee  | <i>Myristica fragrans</i> Houtt.     | Myrustucaceae    | Fruit      |
| 17) Zar-deik-pho-pwint | <i>Myristica fragrans</i> Houtt.     | Myrustucaceae    | Flower     |
| 18) Lay-hnyin          | <i>Syzygium aromaticum</i> L.        | Myrtaceae        | Flower     |
| 19) Ka-ku-ka-me-thee   | Unidentified                         |                  |            |
| 20) Ka-ku-ka-me        | Unidentified                         |                  |            |
| <b>Mineral Origin</b>  |                                      |                  |            |
| 21) Pa-yoke            | Camphor                              |                  |            |
| <b>Animal Origin</b>   |                                      |                  |            |
| 22) Ka-toe             |                                      |                  |            |

**12) TMF-35: (Mar-ti-la-wun-ga-hsay)****Usage:** Fever, asthma, wind disorder, cough, constipation, bleeding, nose bleeding, dysentery, diarrhea

| Composition          | Scientific name                      | Family        | Parts used |
|----------------------|--------------------------------------|---------------|------------|
| <b>Plant origin</b>  |                                      |               |            |
| 1) Zar-deik-pho-thee | <i>Myristica fragrans</i> Houtt.     | Myrustucaceae | Fruit      |
| 2) Samon-sa-bah      | <i>Foeniculum vulgare</i> Mill.      | Apiaceae      | Fruit      |
| 3) Samon-byu         | <i>Carum copticum</i> Benth. & Hook. | Umbelliferae  | Fruit      |
| 4) Samon-nyo         | <i>Apium graveolens</i> L.           | Umbelliferae  | Seed       |
| 5) Samon-byu         | <i>Lepidium sativum</i> L.           | Cruciferae    | Stem       |



|                        |                                      |                  |             |
|------------------------|--------------------------------------|------------------|-------------|
| 6) Samon-ni            | <i>Carum copticum</i> Benth. & Hook. | Umbelliferae     | Seed        |
| 7) Pan-nu              | <i>Hemistrepta lyrata</i>            | Asteraceae       | Root        |
| 8) Pan-ma              | <i>Anneslea fragrans</i>             | Theaceae         | Bark        |
| 9) Kat-ta-ra-thin-chay | <i>Pistacia integerrima</i>          | Anacardiaceae    | Leaf gall   |
| 10) Sular-na-phar      | <i>Alhagi Camelorum</i> Fisch        | Papilionaceae    | Whole plant |
| 11) Hsaung-may-gah     | <i>Picrohriza kurroa</i> Royle       | Scrophulariaceae | Root        |
| 12) Zi-yar             | <i>Cuminum cyminum</i> L.            | Umbelliferae     | Fruit       |
| 13) Ka-ra-way-ywet     | <i>Cinnamomum inunctum</i> Meissn.   | Lauraceae        | Leaf        |
| 14) Gan-gaw-wut-san    | <i>Mesua ferrea</i>                  | Hypericaceae     | Stamen      |
| 15) Nga-yoke-kaung     | <i>Piper nigrum</i> L.               | Piperaceae       | Fruit       |
| 16) Peik-chin-thee     | <i>Piper longum</i> L.               | Piperaceae       | Fruit       |
| 17) Gyin               | <i>Zingiber officinale</i> Roscoe.   | Zingiberaceae    | Rhizome     |
| 18) Thit-gya-boe       | <i>Cinnamomum zeylanicum</i> Nees.   | Lauraceae        | Bark        |
| 19) Phar-lar-ngei      | <i>Elettaria cardamomum</i> Maton.   | Zingiberaceae    | Seed        |
| 20) Kant-gyok-ni       | <i>Plumbago rosea</i> L.             | Plumbaginaceae   | Stem        |
| 21) U-pa-tha-ka        | <i>Tylophora asthamatica</i> W& A.   | Asclepiadaceae   | Stem        |
| 22) Kya-zoot           | <i>Terminalia citrine</i> Roxb.      | Combretaceae     | Fruit       |
| 23) Lay-hnyin          | <i>Syzygium aromaticum</i> L.        | Myrtaceae        | Flower      |

**13) TMF-43: (Akin-sai-bah-hsay)**

**Usage:** Indigestion, bowel disorder, frying acrid smells, menstrual disorder, headaches and stiff neck, ezema and rashes, fever, colds and coughs, small pox

| Composition         | Scientific name                          | Family         | Parts used |
|---------------------|--|----------------|------------|
| <b>Plant origin</b> |  |                |            |
| 1) Gway-dauk-myyit  | <i>Dragea volubilis</i> Benth. Ex. Hook. | Asclepiadaceae | Root       |
| 2) Na-nwin-war      | <i>Curcuma longa</i> L.                  | Zingiberaceae  | Rhizome    |
| 3) Myet-hmway       | unidentified                             | -              | Rhizome    |
| 4) Pan-yinn         | <i>Vetiveria zizanioides</i> (L.) Nash.  | Poaceae        |            |
| 5) Pai-lai          | <i>Woodfordia fruticosa</i> (L.) Kurz    | Lythraceae     | Flower     |
| 6) Pan-nu           | <i>Hemistrepta lyrata</i> Bunge.         | Asteraceae     | Root       |
| 7) Pan-oot          | <i>Kaempferia pulchra</i> Ridl.          | Zingiberaceae  | Rhizome    |
| 8) Pe-na-thar       | <i>Trigonella foenum graecum</i> L.      | Fabaceae       | Seed       |
| 9) U-pa-tha-kar     | <i>Hemidsmus indicus</i> W. & A.         | Asclepiadaceae | Stem       |
| 10) Kan-ba-lu       | <i>Valeriana wallichii</i> DC.           | Valerianaceae  | Rhizome    |
| 11) Thit-kya-boe    | <i>Cinnamomum zeylanicum</i> Ness.       | Lauraceae      | Bark       |
| 12) Gan-gaw         | <i>Mesua ferrea</i> L.                   | Hypericaceae   | Stamen     |
| 13) Nan-tha-phyu    | <i>Santalum album</i> L.                 | Santalaceae    | Wood       |
| 14) Nan-tha-nee     | <i>Pterocarpus santalinus</i> L.         | Fabaceae       | Wood       |

U Tun Nyant started his profession in 1974 and his formulations have wider demand even in Bangladesh. Of the total malarial patients he treated, 80% were claimed to be cured. He emphasized the need for TM to go hand in hand with modern medicines, and the importance of health education and lifestyles.

71 year old general physician U Aung Chit also learned traditional medical knowledge from his uncle and monks since he was 11 years old. He also emphasized the need for TM and western medicine to go side by side. He is also an

astrologer. If the reason behind illness is unknown, he often treats the patients with witchcraft (black spirit). According to him, an astrologer deals with the external health, and after numerological calculation of stars and planet position, he then advises the patients about what to eat and what kind of rituals need to be done. Rakhaine state in Myanmar is a malaria prone area. According to him, when Portuguese invaded Myanmar in 1630 AD, many of them also suffered from malaria, and were not cured with the medicines they brought from their home country. The private TM doctor of

**Table 3.** Personal formulations used by some TM practitioners in Myanmar**I. Ngan-war-kyi-kyaw****Usage:** Malaria

| Composition        | Scientific name                           | Parts used  |
|--------------------|---|-------------|
| 1) Nga-yoke-kaung  | <i>Piper nigrum</i> L.                    | Seed        |
| 2) Peik-chin       | <i>Piper longum</i> L.                    | Fruit       |
| 3) Ginger          | <i>Zingiber officinale</i> Roscoe.        | Rhizome     |
| 4) Samon-nga-bah   |   |             |
| I. Samon-sa-bah    | <i>Foeniculum vulgare</i> Mill.           | Fruit       |
| II. Samon-byu      | <i>Carum copticum</i> Benth. & Hook.      | Fruit       |
| III. Samon-nyo     | <i>Apium graveolens</i> L.                | Seed        |
| IV. Samon-ni       | <i>Lepidium sativum</i> L.                | Seed        |
| V. Samon-net       | <i>Nagella stiva</i> L.                   | Seed        |
| 5) Nan-tha-ni      | <i>Pterocarpus santalinus</i> L.          | Wood        |
| 6) Nan-tha-phyu    | <i>Santalum album</i> L.                  | Wood        |
| 7) Hsaung-may-kha  | <i>Helleborus niger</i> L.                | Root        |
| 8) Pan -nu         | <i>Hemistrepta lyrata</i> Bunge.          | Root        |
| 9) Pan-ma          | <i>Anneslea fragrans</i> Wall.            | Root        |
| 10) Win-net-myt    | <i>Anodendron paniculatum</i> A.DC.       | Root        |
| 11) Nga-phone-hsay | <i>Aristolochia roxburghiana</i> Klotzsch | Root        |
| 12) Su-la-na-phar  | <i>Alhagi camelorum</i> Fisch             | Whole plant |
| 13) Thit-kye-poe   | <i>Cinnamomum zeylanicum</i> Breyn.       | Bark        |
| 14) Eike-mya-thee  | <i>Lagerstroemia speciosa</i> Pers.       | Fruit       |
| 15) Na-nwin        | <i>Curcuma longa</i> L.                   | Rhizome     |
| 16) Thakyar        | Sugar                                     |             |

**II. Rakhine-Yoe-Yar-Shay-Me-Kyig (Rakhine traditional medicine for malaria)****Uses:** Malaria and fever

| Composition  | Scientific name                    | weight | Parts used |
|--|------------------------------------|--------|------------|
| 1) Na <sub>2</sub> SO <sub>4</sub>                 |                                    | 16 g   |            |
| 2) (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> |                                    | 16 g   |            |
| 3) Moke-Ni   | Not identified                     | 16 g   |            |
| 4) NaCl  |                                    | 16 g   |            |
| 5) Black salt                                      |                                    | 16 g   |            |
| 6) Zer-deik-pho-thee                               | <i>Myristica fragrans</i> Houtt.   | 16 g   | Fruit      |
| 7) Zer-deik-pho-pwint                              | <i>Myristica fragrans</i> Houtt.   | 16 g   | Flower     |
| 8) Shein-go  | <i>Gardenia lucida</i> Roxb.       | 16 g   | Latex      |
| 9) Samon-net                                       | <i>Nigella sativa</i> L.           | 32 g   | Seed       |
| 10) Nga-yoke-kaung                                 | <i>Piper nigrum</i> L.             | 32 g   | Fruit      |
| 11) Dry Salt                                       |                                    | 32 g   |            |
| 12) Na-nwin-sein                                   | <i>Curcumin longa</i> L.           | 32 g   | Rhizome    |
| 13) Na-nwin-khar (bitter taste)                    | <i>Curcumin longa</i> L.           | 32 g   | Rhizome    |
| 14) Gyin   | <i>Zingiber officinale</i> Roscoe. | 32 g   | Rhizome    |
| 15) Kyat-thun-phyu                                 | <i>Allium sativum</i> L.           | 32 g   |            |
| 16) Soot   |                                    | 80 g   |            |
| 17) Kun-ywat                                       | <i>Piper betle</i> L.              | 160 g  | Leaf       |
| 18) CaO  |                                    | 16 g   |            |

**Preparation method:** 9-11 should be roast fried. 13-16 should be keep in the fire and taken out. All the components are then powdered and made into pill size of a small plumb.

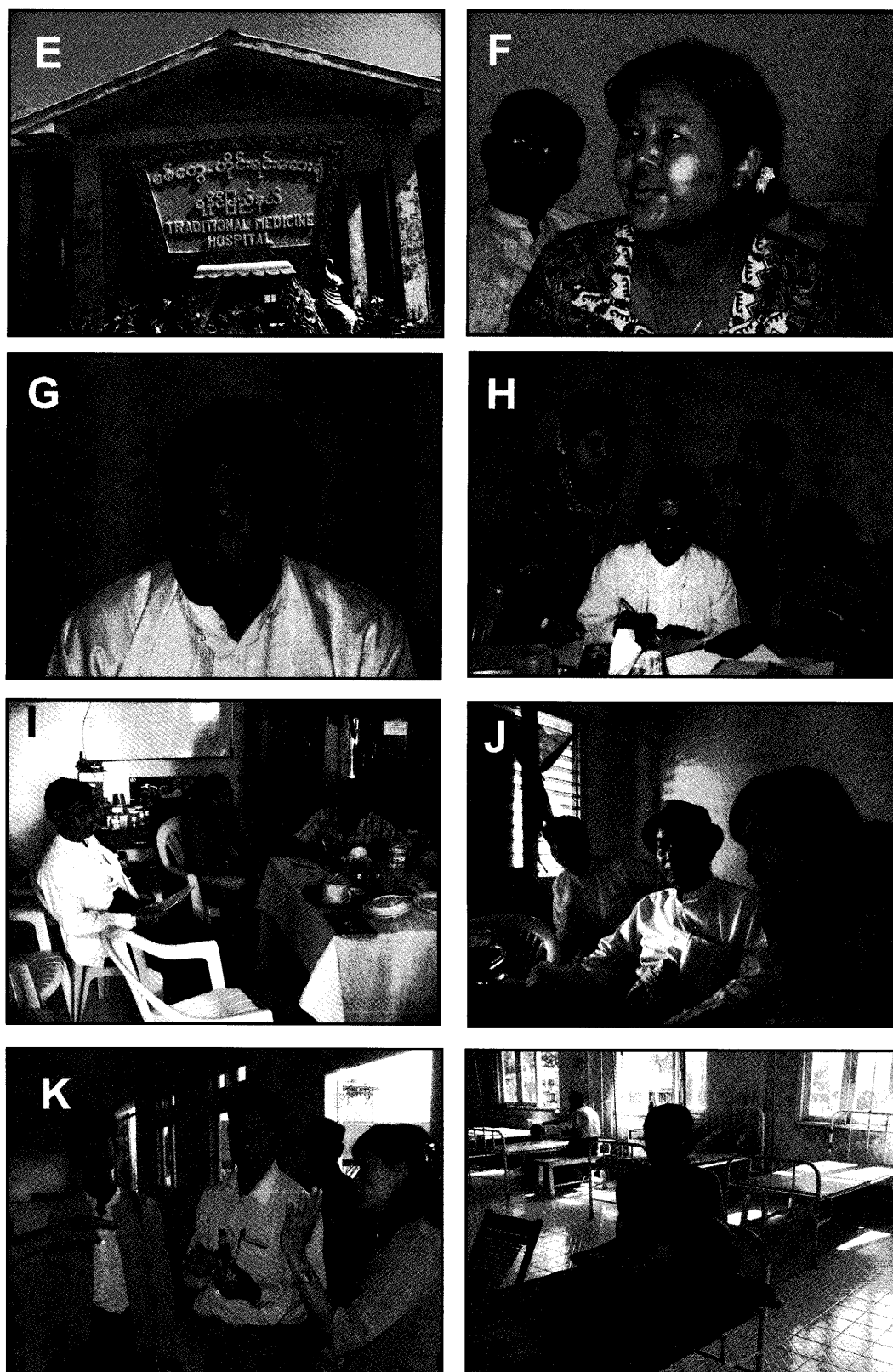
Taste: hot and bitter; Dose: 1-5 pills, 3 times/day; Administration: For normal fever, taken with hot water; For Malaria, should be taken either with the decoction of Betel or, *Acacia concinna*.

the then king of Rakhine state successfully treated them using their indigenous drugs. He recalled that in his childhood during World War II, there was shortage of western drugs and the people abundantly relied on indigenous drugs. Rakhine-Yoe-Yar-Shay-Me-Kyig (Rakhine traditional medicine for malaria) is his personal formulae for the treatment of malaria (Table 3).

In Sittwe, U Aung Kyaw Phyu (41 yrs.) is one of the most famous home visit traditional doctors who has 21 years of medical experience in treating tumors, sores and gangrene. The authors in this study team were shocked to see the unbelievable treatment of a cancer patient with his formulation that he inherited from his father (Fig. 2, A-D). His success stories were highly exciting. According to the



**Figure 2.** Photographs from Sittwe Tsp. A) Cancer patient with growing tumor on the neck and application of traditional anti cancer formulae, B) A young boy suffering from unknown malady, C) Mr. Aung Kyaw Phyu treating suspected breast cancer patient, D) face to face interview with traditional healer Mr. Aung Kyaw Phyu about his method of treatment.



**Figure 2.** (Continued) : E) Traditional Medicine Hospital in Sittwe, F) Mrs. Daw Thein Thein Oo, G) Mr. Tun Nyant, H) Mr. Tun Oo Kyaw, I) Mr. Tin Thein, J) Mr. Aung Chit, K) a healer showing special medicinal oil for internal use for the treatment of cancer. L) a patient with her child inside the TM hospital in Sittwe.

author in this study team, Professor Ikuo Saiki, an oncologist from the University of Toyama, this could be a new challenge to modern medicines and may emerge as a new drug discovery, if a proper scientific study could be carried out. When asked about the success rate, Mr. Phyu confidently replied that it was above 90%. Although his only daughter is not interested in TM, he hopes to teach his knowledge that has been passed down through 9 generations to his nephew. Based on the external sensation such as hot or cold, he has two formulations for the tumors and cancer treatment, and one formula for internal application. Biluma-let-war and Hsay-war-pin are the two very important medicinal plants in his cancer formulation, whose scientific identity is yet unknown.

The most concrete information about the status of TM was provided by 50 year old Mr. U Tin Thein (Fig. 2I), a superintendent of Sittwe TM Hospital. The hospital has a total of 18 staff members including 4 licensed practitioners and 2 nurses. A total of 1668 patients visited the OPD in the year 2003, and among them 23% were paralysis cases, 25.48% had hypertension, and 39.6% were arthritis cases. This hospital only uses the massage technique called Kyat-htoke and TM formulations (TMF) approved by the Department of Traditional Medicine in Myanmar, Ministry of Health. Averages of 15-20 patients visit each day in this hospital. A room charge and TMF formulations are offered for free to the patients. According to him, the only existing TMF formulations are not sufficient to treat a wide range of diseases, so he emphasizes the need to bring effective ethnic medicines developed by local healers into the national health care system, after proper scientific study. One striking thing is that only 10 out of 57 TMF formulations are available in these hospitals, which are not enough to meet the patient's requirement. Due to this situation, patients sometimes need to spend an extra 300 kyat (US \$ 0.22) to buy some other commercial medicines. Among the total patients who visited this hospital, 25% got completely cured with TM. The high statistical rates for failure are due to several reasons, such as some patients go back home before complete recovery due to lack of a financial source, changing to a western hospital, etc. He strongly emphasized the need for modernizing TM and quality control into a GMP standard.

### 3.1.2 Thandwe Township:

Thandwe Tsp. of Rakhine state is a remote village. Almost all the TMPs interacted with (Fig. 3) here inherited their medical knowledge through generation transfer. Although they are popular among the local peoples and recognized as highly skilled practitioners in the society, many of them have not obtained a formal license to practice. Most of the practitioners use the medicines that are indigenous to Rakhine state.

A 42 year old owner an Orthopedic clinic in Thandwe district, Mr. U Aung Tin, uses only sesame oil for the treatment of bone fracture cases. He chants spiritual words secretly to the oil before it is applied to the patient. He has been practicing this healing technique for the last 22 years. According to him, a total cost of 3000 kyat (US \$ 2.22) is

required to treat each case and requires less than 15 days to cure people less than 25 years of age while it may take a little longer time for people above 25 years of age.

U Khin Mya has special techniques to remove animal poison. He uses thunder stones (stones which fall down from space) to absorb poison from the patient. The cost depends on each case and varies from 10,000 to 50,000 kyat (US \$ 7-37) for the treatment. When asked about the high cost rate, he said that he also provided accommodations and food to the patients in his house while undergoing treatment, which is just like a small hospital. People who come from long distances are benefited by this kind of facility.

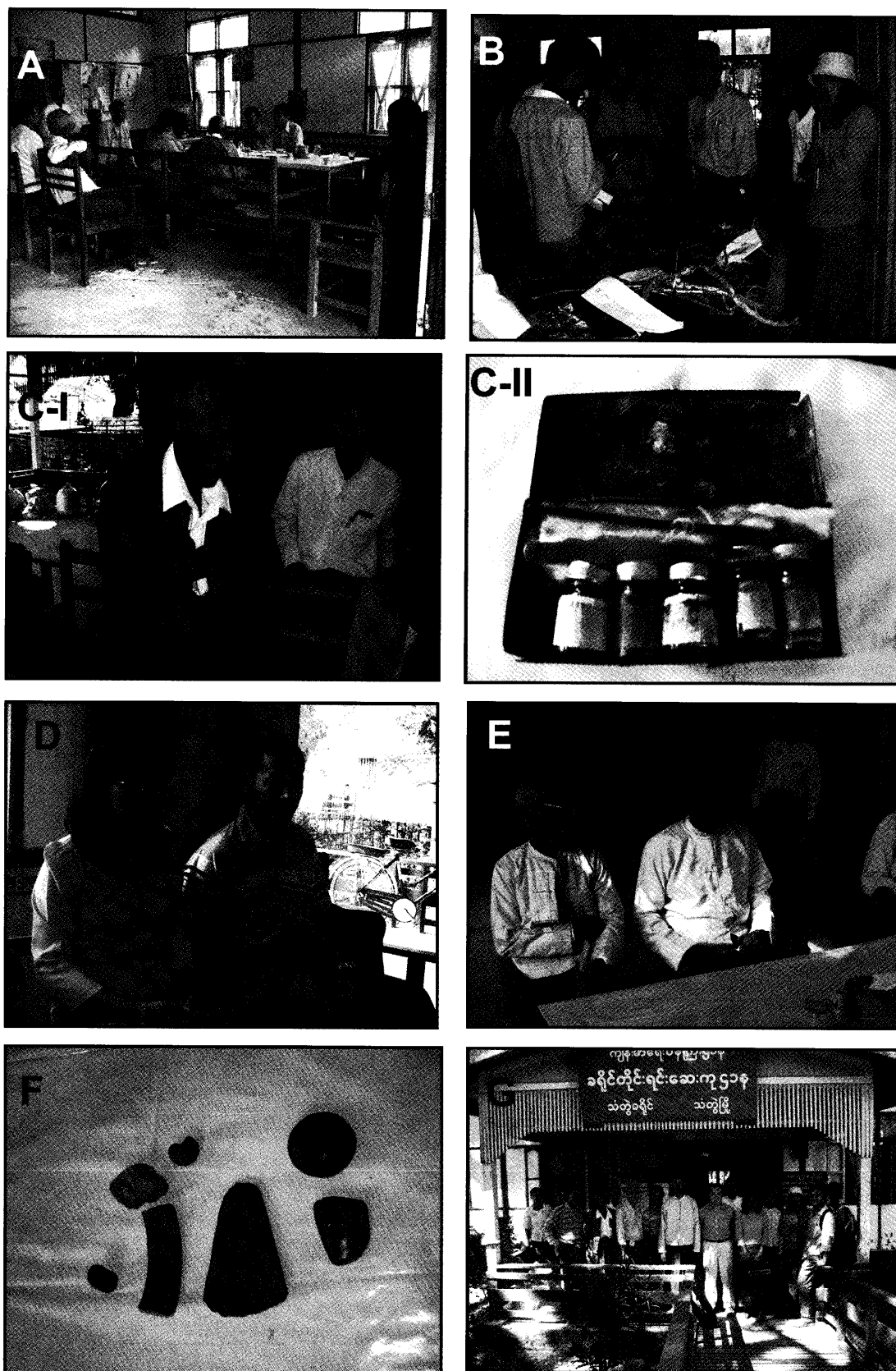
U Hla Thein is a home visit practitioner in Thandwe Tsp. in Rakhine state and is a psychiatric specialist. He has over 40 years of experience. He has two formulae for treating psychiatric diseases, and did not want to disclose the plants he uses. He collects the medicinal plants samples from the forest and also buys some common medicinal plants from the market. The investigation fee is free, but it costs 3000 kyat after recovery from each patient.

Daw Khin San Yi, a 35 year old practitioner from Shwe Mying Mo Clinic, has 15 years of experience in treating nerve diseases and arthritis. *Oroxylum indicum* Vent. and *Piper betle* Linn are commonly used medicinal plants in her treatment. According to her experience, *Scoparia dulcis* Linn is useful for asthma. She uses the combination of TMF-4, TMF-3 and ash of *Scoparia dulcis* Linn for hot asthma.

U Tun Sein, a 75 year old practitioner, learned the techniques to cure the paralysis and nervous diseases from the Buddhist monks when he was a child and has been practicing that art for the past 45 years. He uses ethanol extract of the mixture of lemon, ginger, *Alpinia conchigera* Griff for application to the paralyzed part of the patient with the help of a special copper needle, more or less like acupuncture. According to him, copper is a good electric conductor, and is effective for the treatment of paralysis. Since paralysis is a cold type disease, all the plants used for the treatment should be of hot type.

U Soe Than inherited the knowledge of TM from his father-in-law, and has 20 years of experience in treating child diseases and flatulence. His treatment is influenced from the Indian system of TM, and he treats the patients based on the five elements described in Ayurveda. In his treatment, *Entada phaseoloides* Merr. is burnt to get ash and used immediately as medicine for ulcer and edema.

Thu-rat-thati, a 42 year practitioner, learned medicinal knowledge from the villagers, and has been curing mental diseases for 35 years. According to him, over 40% of the people use TMs. He uses about 200 medicinal plants in his preparations. The population of Thendwe is about 200,000, while they have only 15 traditional practitioners. When asked about how the people judged where to go for traditional medical treatment, he said that the people in the surrounding decide. He did not want to disclose his secret formulae, which he claimed lowered blood pressure from 260/140 to 120/80.



**Figure 3.** Photographs from Thandwe Tsp. A) Scenario inside traditional medicine clinic during interview, B) demonstration of medicinal plants by the healers, C) Mr. Tun Sein demonstrating his art to cure nervous disorders with medicinal plant extracts (right), D) Mrs. Khin San Yi and Mr. Khin Mya, E) Mr. Hla Thein and Mr. Soe Than, F) Thunder stones used to remove animal poison, G) a group photograph with traditional healers.

### 3.2 Ayeyarwady division:

Ayeyarwady Division of Myanmar occupies an area of 13,566 sq-miles of the delta region of the Ayeyarwady river. The Division lies between north latitude 15°40' and 18°30' approximately and between east longitude 94°15' and 96°15'. It is bordered by Bago Division to the north, Bago Division and Yangon Division to the east, and the Bay of Bengal to the south and west. The population is over 6.5 million and the major ethnic groups are Bamar and Kayin. Patheingyi is the principal city of the division. Interviews were conducted in Patheingyi Tsp (Fig. 4) and Hinthada Tsp (Fig. 5)

#### 3.2.1 Patheingyi Township:

U Khin Sein, a 74 year old TM practitioner, has 38 years of experience in treating general diseases and has participated in 3 month refresher training course in the Department of Traditional Medicine, Ministry of Health, Myanmar. He examines 5-10 patients every day in his clinic named Na-Ba-Yan Clinic. His treatment and diagnosis is based on Daden-naya principle (hot or cold), which originated 300 years ago during the Tha-ye-khit-ta-yar period. He taught his knowledge to both his son and daughter and uses mostly 57 TMF formulas in his treatment. From one patient, he obtains 1500 kyat/12 days.

Sa-Ya-Aung, a TM Clinic, is owned by U Kan Shein, a 72 year old TM doctor who inherited the knowledge of TM and therapy from his parents. All the six members in his family are involved in this TM. He has 5 of his own formulae for the treatment of ulcer and tumors, and is well renowned personality in that area. His medical preparations have been used by the Myanmar people around the globe including Japan and America. One of his personal formulas name is Hsay-pha-young-chat (ointment) and contains 10 ingredients. The authors in this study team were surprised to see the success of unbelievable and effective treatment of many cancer and ulcer patients (Fig. 4, J-N). He has been using his personal formulae for treatment of cancer for the past 30 years, and also wants to include his creation in the national health system as TMF formulation, but he thinks the government should take the initiative. Of the total patients he treated, 1/3rd were successfully cured. According to him, the 20 year old tumor nodule also got successfully cured by his medicine. He does not want to transfer his knowledge to the industrial sector. When asked about the patent of his formulae, he is unaware about that. His annual business earnings are about 200,000 kyat/year (US \$ 1,500) and the whole family was supported with that income source. He never advertised his medicines on commercial radio and TV. He keeps up to date records about his patients. The authors have seen the success of more than 100 cases in photographs. According to him, traditional medicinal practitioners do not confirm cancer like does by western medicine.

U Myint Wai of Aye-Ka-Yi clinic (64 yrs.) has 20 years of experience in treating women and child diseases, especially menstrual disorders and also tumor in the ovary. He has one formulae based on TMF-17 and plants like *Anacyclus pyrethrum* DC, ginger and salt. His modified

formulation of TMF-17 works well if no menstrual cycle occurs for a prolonged period of time. He keeps his own records, and has succeeded in 70-75% cases of the total patients treated. The annual business earnings are 500000-800000 Kyat (US \$ 600). He emphasized the need for an herbal garden, research center and medicinal factory to promote TM, and that the present status should be maintained by transferring knowledge to the younger generation and also by sharing with people who are interested in this knowledge.

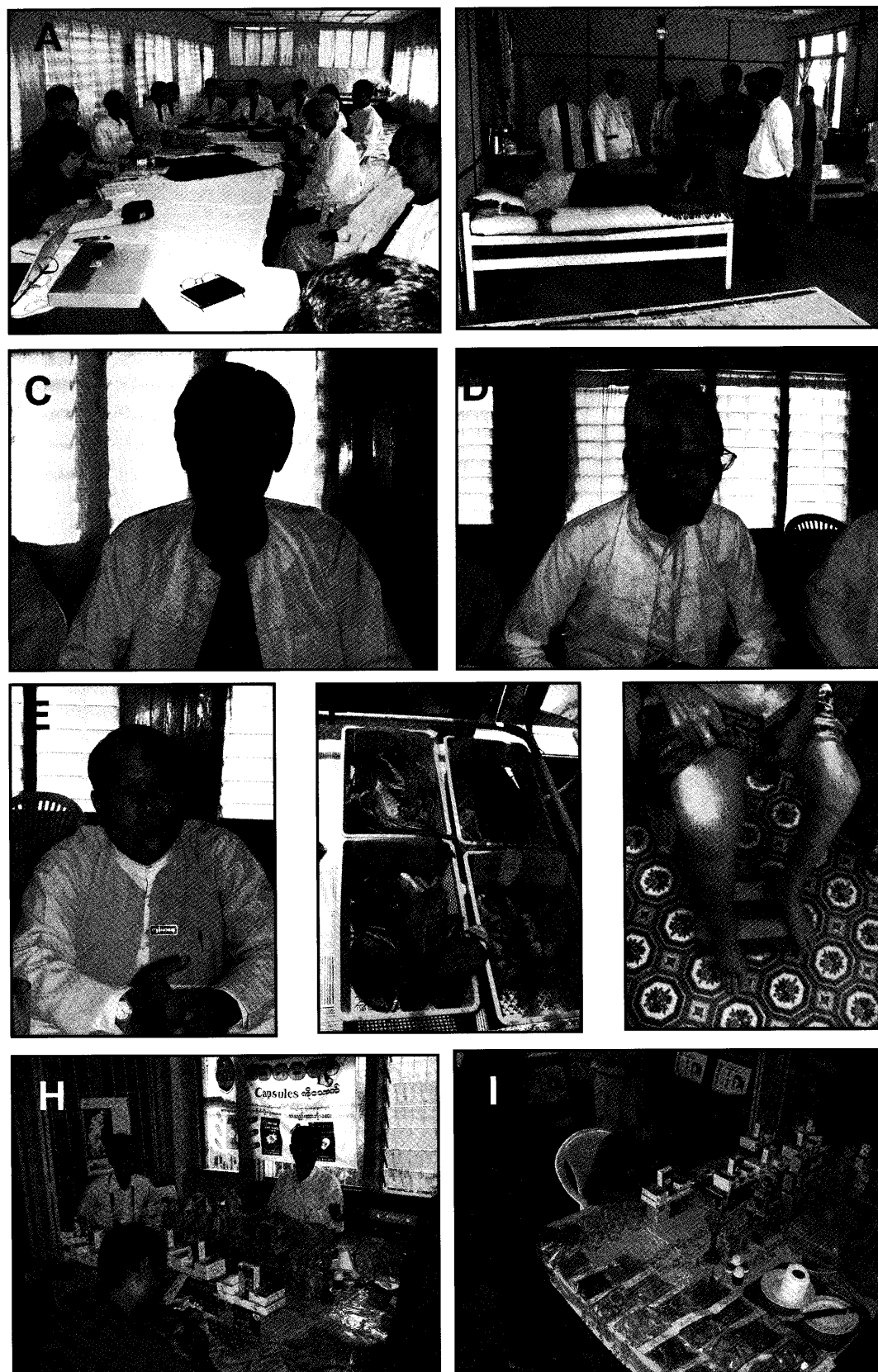
U Aung Kyaung is the medical superintendent of Traditional Medicinal Hospital in Patheingyi, and has 19 years of experience in treating paralysis. In the hospital, about 10-20 patients visit each week, and the hospital has 5 doctors and 2 nurses. The population of Patheingyi is 500,000, and it is the only government established hospital in this region. Of the total visiting patients, over 50% are patients with paralysis. In the year 2003, the number of patients who visited the hospital was 400, while this has been decreased to 276 in 2004. He used 57-TMF formulae together with other medicinal plants such as *Ginkgo biloba* for paralysis, which has been found to be highly effective without any side effect. According to him, for the memory disorders in old age, *Hydrocotyle asiatica* Linn, can be used with express juice or, with honey, and *Linostoma decandrum* Wall is a useful medicinal plant for the healing of ulcer and tumor. Some of the rare plants were found to be cultivated in the nursery of this hospital, and some patients when visiting this hospital, also bring rare medicinal plants with them. This hospital provides free check up for the patients and also provides free TMF medicines. This hospital keeps up-to-date records about the patients and also needs to report to the Department of Traditional Medicine together with the dispensed drugs and patients. Out of 57 TMF medicines, only 27 are available in this hospital, which according to him are sufficient for common diseases. But for some chronic cases, the patients may need to buy drugs from private companies. This hospital has only 5 doctors and they have overwork due to a high patient load. The doctors do not get overtime salary. He strongly emphasized the need for collaboration with other TM private doctors, who have long term experience for many generations.

#### 3.2.2 Hinthada Township:

Mr. Hla Si (50 yrs.) is the TM practitioner in the District Traditional Clinic in Ayeyarwady division in Hinthada (Fig. 5A). He has 20 years of experience in treating nerve diseases. Averages of 20-25 patients visit him every day. As he is a government employee, he prescribes only TMF medicines. According to him, TMF 25 mixed with decoction of *Andrographis paniculata* is a good medicine for malaria.

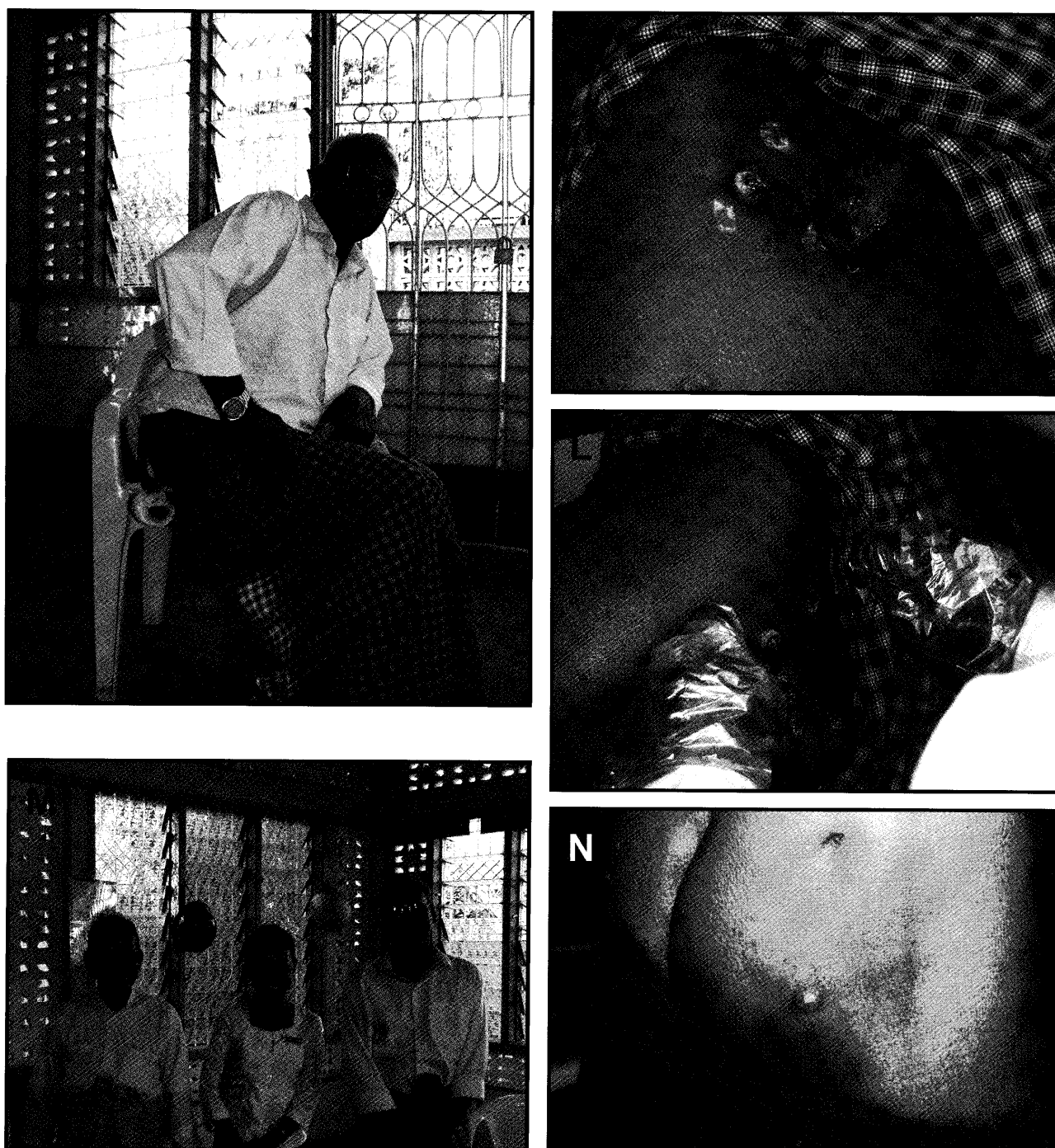
Mr. Mying Maung (69 yrs.) has his own clinic in Bo-Myat Tun street Sa-Kar Quarter, and has 50 years of experience in treating gout and arthritis (Fig. 5B). He has modified some TMF medicines and gives them to the patients. He also measures ASO levels in the blood of the patient before and after the treatment. In his method of treatment, TMF-13





**Figure 4.** Photographs from Patheingyi Tsp. A) Interview session in Traditional Medicine Hospital, B) a brief inspection of the TM hospital, C) Mr. Khin Sein, D) Mr. Myint Wai, E) Mr. Aung Kyaung, F) medicinal herbs used for traditional massage, G) a patient with bone cancer, H) & I) crude drug collection





**Figure 4.** continued. J) a patient with growing tumor on his buttock, K) close up photograph of tumor, L) treatment with traditional method, M) a confident traditional healer Mr. Kan Shein (left), his daughter who also assists him (Center) and a satisfied patient (left), N) photograph taken after complete recovery.

(7-10 AM) is given in the morning, Decoction of *Vitex trifolia* or, *Vitex nigrium*, *Zingiber barbatum* with sugar in slurry form during the afternoon which works as an anti-inflammatory and analgesic and TMF-11-before going to bed.

Mr. Ohn Shwe (Fig. 5C) is a 76 year old practitioner who has 60 years of experience in treating edema and other

general diseases, and learned healing techniques from the monks and from his father through generation transfer for the past 9 generations. He claimed that of the total edema patients he treated, 90% got completely cured. According to him, banana and pork should be avoided during edema. He uses the root of *Thevetia peruviana* K. Schum (8 g). It is a poisonous plant and the dose if exceeds over 8 g it may lead

to death of the patients. His personal formula for treatment of edema constitutes *Thevetia peruviana* (8 g), Jaggery (160 g), Samon-nga-bah (Table 3, component 4) in 2 liter of water. These all are decocted to make 1 lit, and are taken every time before and after meals (6 times a day). According to him, each TM practitioner should share their knowledge and discuss with each other about the promotion of TM. The status of TM is getting better compared to the past.

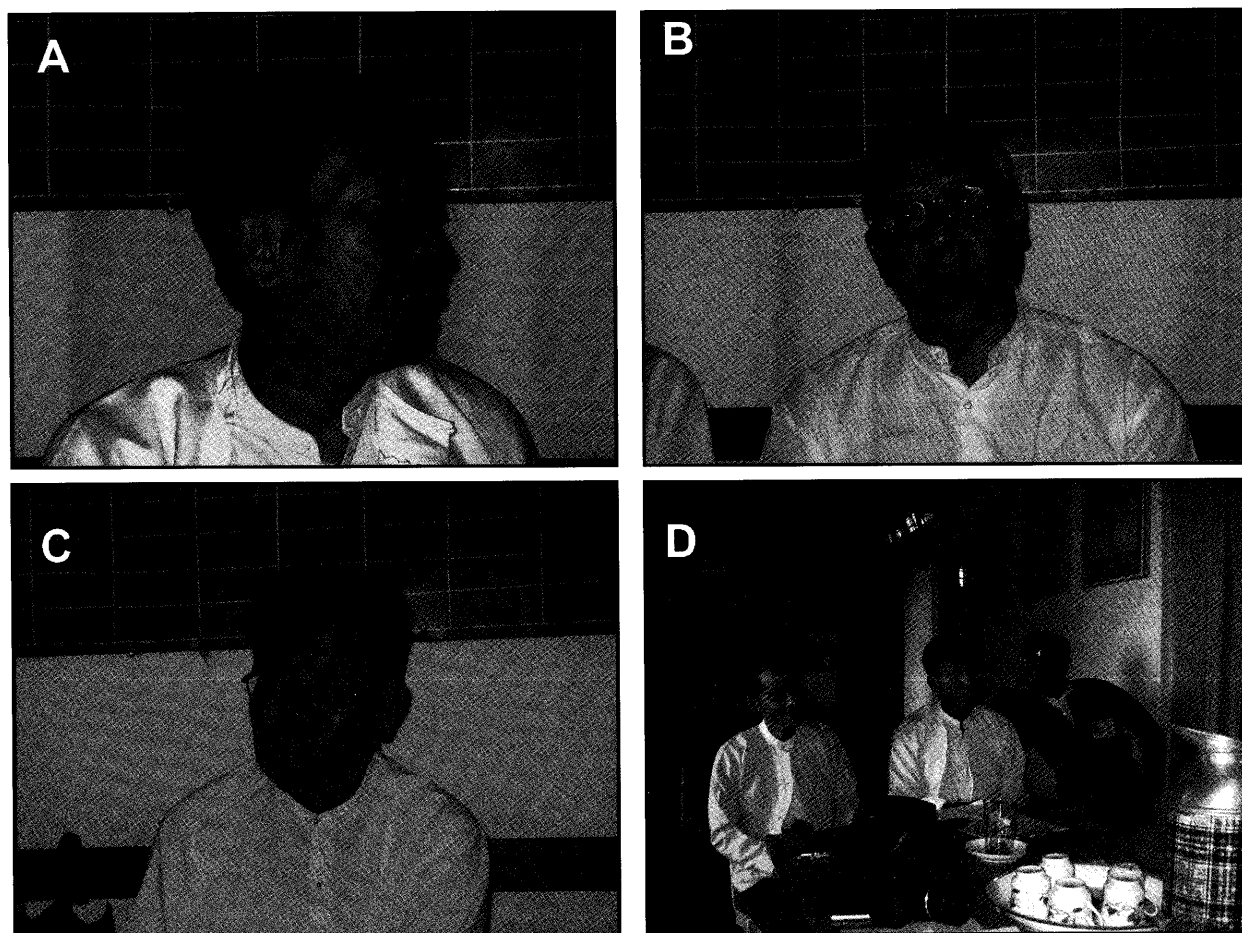
Mr. Maung Maung Aye of Myitta Daw Clinic in Hinthada has 35 years of experience in treating Tumor and Paralysis (Fig. 5D). His wife and daughter support him as staff members. He uses his own formula in combination with TMF-2, and TMF-7 in the treatment for tumor. He wants to share his knowledge with his family. He claimed that he has treated tumors of Lipid, breast *etc.*, and 75% of the patients got completely cured. If surgery is necessary, he then recommends the patients to the western hospitals.

48 year old Mr. Kyaw Hlaing is a home visiting practitioner and has 28 years of experience in treating general diseases. Contrary to other TM practitioners, he modified TMF-17, 25 and 35 in the form of ethanol extract, and gives

a patient to 1 spoon three times a day. For external application, he uses the mixture of TMF-43, TMF-29 and *Curcuma longa* (ratio, 1:1:2), these mixtures were percolated and used for inflammation and ulcer. Sometimes, he used these medicines together with soap. For tonic, TMF-30 mixed with some other TMs imported from India, including ginseng is used. Since the drugs containing ginseng are expensive, he uses TMF-16 as the substitute of ginseng which contains *Withania somnifera* Dunal.

### 3.3. Yangon Division

Yangon Division is an administrative division of Myanmar. It is bordered by Bago Division in the north and east, the Gulf of Mottama in the south, and Ayeyawady Division in the west. Yangon Division is situated between latitude 16°20' north and 17°50' north and longitudes 95° 45' east and 96°46' east in the southernmost part of the central plains. Yangon Division is the most developed area of the country and the main international gateway. Most of the country's industrial zones are located in this division. The division's area is 3,927.15 square miles. The estimated population of Yangon Division in 1999 was 5,420,000



**Figure 5.** Photographs from Hinthada Tsp. A) Mr. Hla Si, B) Mr. Mying Maung, C) Mr. Ohn Shwe, D) Mr. Maung Maung Aye (left), Mr. Hla Si (center) and Mr. Kyaw Hlaing (right).

people. Ethnically, the majority of the population are Bamar. The majority of the inhabitants are Buddhists, Muslims and Christians are also found there.

### 3.3.1 Yangon city (Fig. 6)

Mr. Mying Han (70 yrs.) of Tha Pyay Clinic in Sangyaung Tsp in Yangon seems to be one of the busiest and most famous traditional medicine practitioners in Yangon. The number of patients who visit per day exceeds over 200 (Fig. 6H). A total of 23 staff members work in his clinic. According to him, the most frequently encountered disease is hypertension, paralysis, rheumatism and arthritis. *Curcuma longa* Linn., *Adhatoca vasica* Nees., *Rauwolfia serpentina* Benth and *Parkinsonia aculeate* Linn. are the most commonly used medicinal herbs used by him. He has his own medicinal plant field in Hlegoo Tsp in Yangon division. Buddhist monks visiting his clinics are treated and charged half price of the total cost as a gesture of respect.

Mr. Win Maung (60 yrs.) is the owner of Aungtamann Clinic, and has 25 years of experience in treating menstrual disorders and child diseases. The frequency of patients visiting his clinic varies with the season, normally 30 to 80.

His wife looks after production of traditional medicine, while his son does collection of medicinal plants. His medicine can be kept for 6 months after production. Besides using TMF medicine, he has one personal formula containing turmeric paste, *Aloe vera* and jaggery for menstrual disorders. This medicine also works as a pain killer. The investigation cost is free to the patients, while they need to pay around 2000 Kyat. He emphasizes the need to control lifestyle and regular practice of meditation for about 30 minutes everyday, which helps people to get relieved from anger, misery and stress. Like other practitioners, his diagnosis is also based on the hot and cold principle and a direct questionnaire to the patients.

The owner of Phyu Sin Myittar Clinic in Pazontaung Tsp in Yangoon, Mr. Kyaw Sein is also a famous practitioner with 30 years of experience in treating various liver diseases. Approximately 150 patients visit him in his clinic every day. He did not want to disclose the secrets of his medicine formula.

Mr. Hla Htay (66 yrs.) and Mrs. Daw Tin New Oo (59 yrs.) are husband and wife, and are famous TM practitioners in Yangon. They have over 38 years of experience in



**Figure 6.** Photographs from Yangon city. A) Interview session inside Traditional Medicine Hospital in Yangon, B) Nurses applying traditional massage to the patient, C) ayurvedic equipment on display, d) inspection tour inside the hospital



**Figure 6.** continued, E) Mr. Kyaw Sein examining patient, F) interview with Mr. Win Maung in his private clinic, G) Mr. Mying Han of Tha Pyay Clinic, H) patients load in Tha Pyay Clinic, I) Traditional massage in Tha Pyay Clinic, J) Mr. Hla Htay and Mrs. Tin New Oo of Hman Cho clinic

treating pile, fistula, breast tumor and sores. They have their own factory for the production of medicine, where 100 staff members work. All 6 members of their family are involved in TM practice. The commonly used medicinal plants in their medicine include *Crataeva religiosa* Forst., *Crataeva roxburghii* R. Br., *Holoptelia integrifolia* Planch., and *Nicotiana rustica* Linn.

The Traditional Medicine Hospital of Yangon is

located at Nga-htat-gyi Pagoda Road, Bahan Tsp. This hospital consists of 70 beds and 117 staff members. Dr. Thein Kyaw, (43 yrs.) is the Superintendent of this hospital, and is a government accepted TM practitioner since 1993. He has total of 19 years of experience including 10 years of practice of both western medicine and TM. According to him, around 100 patients visit OPD every day. Among them, 60% are paralysis cases, while around 25% are orthopedic

and the remaining are general cases. This hospital provides TMF medicine free of cost to the patients. He also developed his own formulation for oral use and a lotion. For some formulations, rare medicinal plants have to be collected from the mountains, or by collaborating with disciples of the famous TMP. They are also performing clinical research about the efficacy of some TMF in collaboration with a military hospital for knee, joint and shoulder pain. When asked about the use of the powder form of medicinal plants instead of extract, he replied that for certain diseases powder form works much better than extract. Among the total patients visiting this hospital, 50% recovered well. In many cases the western doctor also refers the patient to visit this hospital for chronic diseases. According to him, traditional physiotherapy is culturally familiar to the people, and is the first choice of more than 75% of the people in Myanmar.

### Results and Discussion

Traditional medicine occupies an important place in the health care systems of developing countries. The World Health Organization (WHO) estimates that more than 80% of health care needs in these countries are met through traditional health care practices. The people in developing countries depends primarily on TM, because it is cheaper and more accessible than western medicine and blends readily into the peoples' socio-cultural life.<sup>12,13)</sup>

A rich heritage of traditional knowledge of the use of plants as medicines can be found in Myanmar which has been inherited from earlier generations, and developed throughout the long history of the nation and its people. Buddha's teaching "Dedana Naya" is also an integral part of Myanmar medical tradition, which teaches that the existence of phenomena and suffering (sickness, old age and death) have a single origin that prevents man from reaching enlightenment, namely ignorance. This is the origin of three moral poisons, desire, aggressiveness and mental darkness. In turn, these three moral poisons will produce three pathogenic agents; air, bile and phlegm which are the origins of sickness. Many TM practitioners who obtained their knowledge from monks have tremendous influence on Buddhism. Meditation is often done to purify body from physical and mental stress and various illnesses.

The traditional health care systems in Myanmar are found to be herbal based, mineral based and animal based. Originally, the ingredients in herbal preparations are ground into powders and were swallowed down with warm water. The TM practitioners in Rakhine state also use marine animals and corals in their treatment, which is rarely found in other parts of Myanmar. The psycho-spiritual practices are also practiced by chanting god's secret sayings, which they learned from their ancestors.

The practice of TM is dominated by mature men. Of the total practitioners interviewed, 81% ( $n = 18$ ) were above 50 years of age, while the remaining 14% were above 40 years of age. All the traditional healers interviewed have extensive experience and had practiced the TM for more than

15 years. 59% ( $n = 12$ ) of TM practitioners, besides their traditional knowledge inherited through generation transfer, also participated in a 3 month refresher course or had 1 year training from the DTM in Myanmar and had obtained a formal license to practice.

TM practitioners learn the art of healing usually from relatives, Buddhist monks and villagers. Traditional knowledge is passed down from an earlier generation in the form of direct observation and oral instructions rather than formally in written form. Most of them choose to become TMP by their own will after their parents teach them to continue their family status and profession as a healer. As with Indian Ayurveda and TCM, the main method of diagnosis are feeling the pulse of artery and vein, checking urine, examining the eyes and tongue as well as interviewing the patient. The diagnosis is mainly based on hot or cold principle, which is often caused by eating the wrong foods for a certain body type. If the body system is cool, then one must eat warm food and vice versa. This pulse diagnosis and hot/cold systems are strikingly similar to Ayurveda and TCM. Occasionally the TM practitioners share their knowledge and experience with others. For a particular disease state, the healers often refer the patients to other TMPs, who are better experienced for that malady. Payment to the healers may be made in cash, donation, food, livestock or cloth. The charge varies according to the nature of disease and the wealth of patient. In many cases, the diagnosis is free, and they are charged only the cost of medicine. Buddhist monks are much benefited in primary health care. Monks are either treated for free or for half price of the total cost, as a donation to Buddha. Healing is a source of income to many famous TMPs. In urban area, many practitioners were found not willing to share their secrets with unknowns, while in remote areas they are more open and willing to disclose the information on their medicines.

The frequency of patients visiting TMPS varies enormously, from 10-15 patients/day to about 200 a day. 56% of TMPs also refer patients to western hospitals for the conditions they feel they can not care for, while few TMPS also analyze the data of blood and urine from the western hospital for their treatment.

The health care seeking behaviors of patients also varies enormously. In the rural areas, where there are no western hospital and doctors, it is a deliberate choice. The TM doctor is easily accessible, and the only affordable source of health care. TM are an integral part of peoples culture and many patients feel safe while taking it. The TM doctor treats the patients in a holistic way.

With the advancement of science and information technology, now the earth has turned into a global village, where people can communicate instantly at any moment, regardless of society, people, culture, religion and country. As the societies tend to change, many cultures and traditions are also influenced. Many areas in Myanmar are now experiencing rapid changes. Many traditional customs are disappearing or are being replaced. Older villagers often complain that their sons and daughters are not interested in learning ancestral medicinal secrets, so they do not continue the



custom of passing on the accumulated knowledge of the clan. Thus, recording the traditional uses of medicinal plants throughout the whole of Myanmar is essential. The conservation of traditional knowledge is extremely important to modern society, because they can provide important new ideas for modern drug discovery. In order to conserve the knowledge of TM, interventions by international and regional organizations such as the World Health Organization (WHO), Japan International Cooperation Agency (JICA), and Department of Traditional Medicine (DTM) in Myanmar should play a positive role for the promotion of TM. In order to promote recognition of role of TM practitioners in health care, integration of dialogue between TMPs and western medicine practitioners at a grass root level is highly essential. Furthermore, the support of the scientific community can be of tremendous benefit to evidence based practice of the traditional medicines. Generation of income for local communities should also be an important motivation for the conservation of local medicinal plant resources.

### Conclusion

In conclusion, we presented a brief overview of the healing art of traditional medicine and its present status in Myanmar. Our study indicated that, the knowledge of Myanmar traditional medicine is a genuine science that they have inherited through centuries of experiences and are handed down from generation to generation through verbal means and direct observations, without written form as in a text or book. The traditional arts of healing practiced in Myanmar can still be a new challenge to the modern medicine system, if proper studies are carried out. Our study also indicated that the traditional knowledge as well as the plants that the traditional healers rely upon are being lost at an alarming rate in Myanmar. Therefore, it is important that immediate steps be taken to protect the important source of traditional knowledge as well as medicinal plant diversity. The knowledge of indigenous plants, the folklore of medicinal plants from local healers, and the ethno botanical information that these individuals can supply were also found to vary among different ethnic cultures in Myanmar that may narrow the search for plants with potential pharmacological activity and modern drug discovery. Thus, investigation of the medicinal plant resources and crude drugs for scientific evaluation is highly essential to bridge experienced based traditional medicine and evidence based medicine.

### Acknowledgement

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### References

- 1) Ministry of Health, Myanmar. Traditional Medicine in Myanmar. Ministry of Health, Department of Traditional Medicine, Myanmar, 2003.
- 2) Awale, S., Tezuka, Y., Banksota, A. H., Kouda, K., Tun, M. T., Kadota, S.: Five Novel Highly Oxygenated Diterpenes of *Orthosiphon stamineus* from Myanmar. *J. Nat. Prod.*, **64**, 592-596, 2001.
- 3) Awale, S., Tezuka, Y., Banksota, A. H., Kouda, K., Tun, M. T., Kadota, S.: Four highly oxygenated isopimarane-type diterpenes of *Orthosiphon stamineus*. *Planta Med.*, **68**, 286-288, 2002.
- 4) Tran, Q. L., Tran, Q. K., Kouda, K., Nguyen, N. T., Maruyama, Y., Watanabe, H., Kadota, S.: Investigation on traditional medicine in Myanmar and Vietnam. *J. Trad. Med.* **20**, 173-186, 2003.
- 5) Tran, Q. L., Than, M. M., Tezuka, Y., Banksota, A. H., Kouda, K., Watanabe, H., Zhu, S., Komatsu, K., Thet, M. M., Swe, T., Maruyama, M., Kadota, S.: Wild ginseng grows in Myanmar. *Chem. Pharm. Bull.* **51**, 679-682, 2003.
- 6) Kadota, S., Tezuka, Y., Prasain, J. K., Ali, M. S., Banksota, A. H.: Novel diarylheptanoids of *Alpinia blepharocalyx*. *Curr. Top. Med. Chem.*, **3**, 203-225, 2003.
- 7) Banksota, A. H., Tezuka, Y., Tran, Q. L., Kadota, S.: Chemical and biological activities of Vietnamese medicinal plants. *Curr. Top. Med. Chem.*, **3**, 227-248, 2003.
- 8) Tran, Q. L., Tran, Q. K., Kouda, K., Nguyen, N. T., Maruyama, Y., Saiki I., Kadota, S.: A survey on agarwood in Vietnam. *J. Trad. Med.*, **20**, 124-131, 2004.
- 9) Subehan, Ueda, J., Fujino, H., Attamimi, F., Kadota, S.: A field survey of agarwood in Indonesia. *J. Trad. Med.*, **22**, 244-251, 2005.
- 10) Nakashima, E. M. N., Nguyen, M. M. T., Tran, Q. L., Kadota, S.: Field survey of agarwood cultivation at Phu Quoc Island in Vietnam. *J. Trad. Med.*, **22**, 296-300, 2005.
- 11) MMT and TZL were the recipients of JICA fellowship to conduct research in traditional medicine and obtained Masters Degree from the Institute of Natural Medicine, Toyama Medical and Pharmaceutical University in the year 2001/4 2003/3 and 2002/4 2004/3, respectively.
- 12) World Health Organization (WHO). National policy on Traditional Medicine and Regulation of Herbal Medicine. WHO, Geneva, Switzerland, 2005.
- 13) World Health Organization (WHO). Legal status of traditional medicine and complementary/alternative medicine, a world wide review. WHO, Geneva, Switzerland, 2001.

### Japanese abstract

伝統薬物は人類の文化に不可欠な部分であり、先進国においても、プライマリー・ヘルスケアとして広く利用されている。ミャンマーでは豊かな伝統医学の知識が継承され、今なお植物を医薬として利用している。しかしながら、ミャンマーの多くの地域ではそのような知識や技術が急速な変化に直面しており、伝統医師の持っている医学的知識や薬用植物に関する知見が急速に失われつつある。そのため、伝統医薬に関する重要な知識源および薬用植物の多様性を保護するために迅速な措置をとることが重要である。本論文ではミャンマーの伝統医師に直接聞き取り調査を実施し、治療に成功した症例や、所有している薬用植物とその使用方法、処方などの伝統医療知識に関する情報を明らかにした。

\*〒930-0194 富山市杉谷 2630

富山大学和漢医薬学総合研究所 門田重利