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# Traditional Therapeutic Uses of Noni (*Morinda citrifolia* L. var. *citrifolia* L.) in Micronesia

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## Abstract

*Traditional herbal medicine is part and parcel of all Pacific Island cultures. It is a classic example of complex island technology that has alleviated sufferings and diseases of its people for centuries. Over the years, it has evolved and passed on for generations to reflect different philosophical backgrounds and cultural origins of various island communities in the Pacific. Noni is the most commonly used medicinal plant in Micronesia. Since its journey from South East Asia along with early human migration over 2000 years ago as a canoe plant for survival, it found a place of pride in the annals of traditional healers in the Western Pacific region. Although modern science is now widely spread, traditional medicinal practices involving noni plant still exist in all islands of this region. Traditional healers employ every part of noni plant including leaves, roots, bark, seeds, flowers and fruits for various ailments, externally and internally. Some of its uses as tonic, demulcent, emollient, stimulant, analgesic and diuretic are exemplary. This paper reviews the multifarious uses of noni in various traditional medications across the Micronesian region. Given the vastness of the region and remoteness of many islands, it is not surprising that traditional medicines still play a major role in the health and well-being of island communities in the Micronesia.*

**Keywords :** Traditional Therapeutic Uses, Micronesia, Herbal Medicines

## Introduction

**T**raditional herbal medicines are used in all the Pacific islands since time immemorial, and are recognized as part of the culture and way of life. Traditional medicine, including the knowledge,

**beliefs and practices** of holistic health care is an ancient medical practice, existed in human **societies** before the application of modern science to health. It is based on indigenous theories, **beliefs** and experiences and is widely accepted for its role in health maintenance and treatment of **disease**. It has evolved to reflect different philosophical backgrounds and cultural origins. Although **modern** medicine is widely spread, traditional medicine still exists in all the islands of Micronesia .

**Traditional** medicine in the Micronesian region, having evolved from the applications of a wide range of medicinal plants, is a much coveted heritage whose preciousness has been fiercely guarded and secretly preserved by family and tribal descendents. Some methods of treatment and preparation of medicines are generally known whereas other techniques and accompanying knowledge are not, as they are integral components of the cultural heritage and intellectual property of traditional healers and tribal island practitioners (Nandwani, 2003). Moreover, such heritage and property are the *raison d'être* of their livelihoods and an undisputable factor for their self-sustaining existence. Notwithstanding the attraction, the introduction, and efficiency of modern medicine, many island communities are unwilling to forego their confidence, cultural customs and reliance in relation to their traditional medicines which have contributed to their healthcare for decades through use of one or more parts of medicinal plants (DaSilva and Krishnapillai, 2007). In Satawal, one of the remote islands of the Federated States of Micronesia, traditional medicinal practices are highly guarded, the information passes from parents *exclusively* to children (personal information). Similarly, much of the knowledge used in traditional Pohnpeian medicine remains a proprietary medical discipline, with training provided by the Master traditional practitioner. Usually the knowledge of this type of medicine is kept within the family and is considered secret (Ballack, 2009).

Like the Polynesian and Melanesian regions, Micronesian region is rich in traditional medicinal knowledge that has been accumulated for use over a span of some 3000 years. Home to a large number of varied cultural and ethnic groups, the Micronesia possesses a wealth of bioresources. These Pacific regions are acknowledged treasure-houses of traditional medicine and domesticated medicinal skills (DaSilva *et al.*, 2004). From cultural standpoint, traditional medical care is still very highly regarded in Micronesia. This review covers use of noni in traditional medicine among the various cultures of Micronesia.

## Noni – The Pacific Healer

Medicinal plants are the main ingredients of traditional medicines. Among the traditional medicinal plants discovered by the ancestors of Pacific islanders, *Morinda citrifolia* L., popularly known as noni, is one used over 2000 years in Pacific region (Whistler, 1992; Dixon *et al.*, 1999). It is one of the most significant sources of traditional medicines among the Micronesians. Although its use as a natural adaptogen has become known in the continental United States recently, there is abundant evidence that traditional healers used the fruit for thousands of years to address a variety of illnesses. Noni is believed to have originated in Southeast Asia, around New Guinea. Later it spread to all Pacific islands along with human migration or natural means. Noni was one of the canoe plants<sup>2</sup> that ancestors of Pacific islanders brought with them when they migrated from Southeast Asia more than 2000 years ago (Nelson and Elevitch, 2006).

Noni is arguably the most important medicinal plant in the Pacific, based on the number of indications reported and the breadth of usage across cultures (McClatchy, 2002, Whistler, 1992, Ballack, 2009). Medicinal applications and decoctions refined and 'standardized' through repeated domestic use contributed to development of self-sustaining traditional healthcare systems in the conservation of early and contemporary human health resources in the Micronesian region. In all the islands of this region, noni was historically used as a cure for a range of human health problems (Table 1).

**Table 1: Traditional Micronesian treatments involving Noni<sup>A, B</sup>**

Disease states	Treatments <sup>C</sup>
Fever	<ul style="list-style-type: none"><li>• Four young leaves are pounded with a spoonful of the scraped bark of <i>Clerodendrum inerme</i>, placed in hot water, and one cup is consumed (PN, CK)<sup>D</sup></li><li>• Leaves are placed all over the body forehead and gently rubbed (MI, YP)</li></ul>

- Urinary tract infections and cramps

  - Six young fruits, three green leaves and three yellow leaves are pounded together along with 7 cm long root of *Phymatosorus grossus* and rubbed all over the body and inhaled (MI)
  - Eight roots are removed from the plant, cleaned, cut into 10-cm long pieces, added with water in a kettle, brought to boil, and consumed once daily for eight days (PN)
- Skin diseases

  - The pounded roots are squeezed on the infection and repeated three or four times daily until better (for impetigo, a high contagious bacterial infection) (PI)
  - Two ripe fruits are pounded together with half of grated coconut, mixed together and placed in the sun for one day. Later the juice is squeezed over the skin like a lotion (MI, YP)
  - Scrapings from roots are mixed with a light film of coconut oil that coats the flesh of the mature coconut, and squeezed all over the skin (for rashes) (MI, YP)
  - Roots and branches are crushed together and squeezed onto the skin as cure for rashes (NU)
  - Young leaves are pounded, squeezed and rubbed over the skin as cure for rashes associated with measles (KB, YP)
- Wounds, open cuts

  - Three pairs of young leaves and three pieces of the apical meristem of pandanus (*Pandanus tectorius*) are chewed together, mixed with coconut oil, placed on the wound and wrapped with a cloth for three days (PN, YP)

- Young fruits with attached white flowers are chewed and squeezed onto the open cut daily for two to three days (PN)
- A 7.5-15 cm long piece of root is pounded, squeezed onto the cut, and placed on the cut, secured with a clean cloth as poultice (PN, MI)
- Leaf is chewed or crushed in the hands, put onto the cut and wrapped with coconut fiber (CK, PN)
- Crumpled leaves of *Phaleria nissidai* wrapped in noni leaf and applied to bruise; bruise gradually will become hot, whereupon the leaves are replaced (PL)
- The juice of the inner skin of the trunk is squeezed on a cut for three or four days, and after a scab has formed, the shavings of the inner skin may be applied directly to the cut (PL, YP)

Asthma

- The fruits are boiled in as much water as needed and consumed (PN, YP)

Diabetes

- A green fruit is crushed and squeezed into a cup and consumed once a day for one week (MI, NU)
- One fruit is boiled in a pot of water and consumed like tea daily throughout the person's lifetime (PN, GU)
- Roots are cut into pieces, pounded, placed in a piece of cloth, squeezed into a cup, and consumed one cup daily for four or eight days (PN, YP)

- Twelve young fruits with flowers still attached are pounded, mixed with six green leaves, six yellow leaves and some flowers of *Tournefortia argentea*, squeezed in cloth into one gallon of water, and as much as possible is consumed daily and used frequently (PN)
  - Two or three fruits are mashed in four cups of water, boiled and three or four cups are consumed daily for at least a month, then the treatment is stopped for a while (PN, YP)
  - Three or four fruits are boiled in one cup of water and consumed at room temperature (PN, YP)
  - Four fruits are pounded, squeezed in cloth into a cup of water, and consumed daily for four consecutive days (CK, YP, PN)
  - Old fruits are placed in plastic bag under the sun until water appears in the bag, then one teaspoon is consumed daily (PN, MI, YP)
- Kidney stones
- Eight fruits are boiled in 2 liters of water and one cup is consumed daily until the stone passes and pain is gone (PN)
- Toothache
- Roots of the seedlings are scraped clean of the bark and placed on tooth (PN, MI, YP)
- Earache
- A few drops of the fruit are squeezed inside the ear (PN)
  - Unopened flowers are pounded and placed on breadfruit leaf (*Artocarpus altilis*), steamed to temperature comfortable to put in the ear, placed in a cloth, and the

juice is squeezed into the ear. This medicine is strong, so usually only one dose is needed to relieve the pain quickly, but it can be repeated upto three times (PN)

Stomach ache

- Ripe fruits are mashed and squeezed 2 or 3 drops of juice into the inner ear and covered with the earlobe. The ear is closed for 5 minutes, then drained the juice out (MI, YP)
- Buds are pounded with three other unspecified types of leaves, added to cold water, and consumed (MI, PN)
- Four roots are cleaned, cut into 7.5 cm long pieces, put in a pot with two or three cups of water, boil until the water turns red, and all of it are consumed (PN, YP)
- Young leaves are boiled in water and drunk (YP)
- Scrapings from the skin of a root (about handful) are placed in a breadfruit leaf (*Artocarpus altilis*), which is tied like a purse and placed on fire until heated; then the savings are removed from the leaf, placed in cloth, squeezed into a cup, and two or three cups are consumed daily until the pain stops; this will also stop bleeding (for stomach pain after delivery) (PN)

Sore eyes

- Pounded roots taken with water (for peptic ulcer) (YP)
- A fruit is pounded, wrapped in a piece of cloth, and squeezed into the eye (PN)

Vermifuge

- Young fruits (appearing just after flowers open on them) are crushed between fingers, chewed and swallowed (CK, YP)



### **Menstrual cramps**

- When menstruation is too long, bark is scraped off small roots, squeezed with a cloth into coconut oil, put in a coconut endocarp with small heated stone, and one coconut full is consumed daily for four or eight days (PN, PL, YP)
- Fruits are chewed by women to relieve menstrual pains (KS)
- Pounded roots are boiled in water and consumed (YP)

### **Medicine for delivery**

- A 30cm long section of the middle of a root from the side of the tree where the sun rises is cleaned and a spoonful of root is scraped from a 10 – 12.5 cm long section of the 30cm-long piece, put in cloth, boiled in water, and consumed in place of plain drinking water for about a month (PN)

### **Fish stings**

- A spoonful of scraped bark is placed in cloth and squeezed onto the entry point of the spine (PN)
- Five to ten stipules from the stem are pounded and squeezed on the sting to stop the pain (PN)
- Leaves and fruits are pounded together and applied externally to relieve pain (also for insect bites). (KS, PN)
- A piece of root is pounded and mixed with coconut water and consumed several times a day (MI, CK)
- The outer layer of the root is cleaned off and then scraped the inner layer and squeezed directly into the mouth (YP, MI)

Muscular pain

- Four leaves and coconut meat are put with a hot rock under a coconut cup and rubbed on the body (PN)
- Coconut oil is first applied to the leaves. The leaves are then placed over fire until they are wilted. The warm leaves then are placed over the sprained area. The area is further massaged with leaves (PL, YP)
- Scrapings from surface of root are wrapped in the leaves, heated and applied to the swollen area (PL)
- Young and mature leaves are pounded together and applied over the swollen or affected area (YP)
- Boil pieces of pounded roots in a pot mix with other plants (names not revealed) and water consumed (YP, CK, PN)

Joint pain, arthritis,  
back pain

- Large mature fruits are placed in a jar (as many as will fit), covered, and placed in the sun for a few days until the fruits ooze a fluid that is then spooned out, consumed regularly until the pain is gone (PN)
- Eight leaves are arranged on top of each other in an asterisk shape under a flat, fire heated rock, then placed in a half coconut shell, wrapped in cloth, and pressed on the sore joints and squeezed to relieve the pain (PN)
- The leaves are crushed to make hot poultices applied externally to relieve pain (YP, MI)

Antisyphilitic

- The outer layer of clean roots is squeezed in 2 liters of water and consumed daily for four days or until better (PN)

- Heart disease

  - Leaves are baked and placed on chancre (painless ulceration during preliminary stage of syphilis) (YP)
  - Ripe fruits are placed in plastic bag under the sun until water appears in the bag, then one teaspoon is consumed daily (YP, PN, GU)
- Kidney problems

  - Ripe fruits are placed in plastic bag under the sun until water appears in the bag, then one teaspoon is consumed daily (PN)
- Diarrhaea

  - Two unripe fruits are pounded together with four new leaves of *Phaleria nissidai* and taken with water (PL)
  - Unripe fruits are cooked and consumed (NU)
- For neuralgia

  - Crush young leaves and fruits together and the sap is drunk with coconut milk three times a day (YP)
- Throat pain

  - Young fruit and young leaves are crushed together with leaves and stems of *Davallia solida* and *Vigna marina* and taken with coconut milk (YP)
  - Young fruits with attached flowers (even numbers) boiled in water and drunk (YP)
  - Juice from pounded young and mature fruits taken for relief from cough (KB)
  - Young fruits and leaves are crushed and squeezed out juice consumed for throat infection (NM, YP)
- Cold influenza

  - Leaves are mixed with *Premna integrifolia* leaves to make a hot bandage for treating colds and influenza (YP)
- Gonorrhoea

  - Pounded leaves are squeezed and sap is used externally (MI)

- |                             |  |
|-----------------------------|--|
| Boils                       | <ul style="list-style-type: none"> <li>● Fruits are pounded together with a piece of coconut root, squeeze into a cup of coconut juice and drunk the mixture (MI)</li> <li>● Tender leaves heated up with coconut oil and used as poultice to suck puss out of boils (NU, KB)</li> </ul>   |
| Infection of umbilical cord | <ul style="list-style-type: none"> <li>● Roots of young plants are pounded and juice is squeezed directly to the umbilical cord (MI)</li> </ul>  |
| Cancer                      | <ul style="list-style-type: none"> <li>● Six ripe fruits, twelve green leaves, twelve yellow leaves, twelve buds of <i>Tournefortia argentea</i> and 21cm long banana shoot are pounded together and squeezed the mixture into one gallon water, boil and drunk (MI)</li> <li>● Three young noni fruits with attached flowers are pounded and squeezed the juice into a small cup of water and drunk once a day for three days. Plenty of water is consumed during this treatment (MI, YP)</li> <li>● Pieces of cleaned roots are pounded and boiled in water and consumed several times a day (YP)</li> </ul> |
| Headache and sneezing       | <ul style="list-style-type: none"> <li>● Three young noni fruits are pounded and sniffed throughout the day (MI)</li> <li>● Young fruits and roots are crushed together, cooked and eaten (NU)</li> </ul>  |
| Haemorrhoids                | <ul style="list-style-type: none"> <li>● Young fruits which have flowers attached on it are pounded, mixed with coconut oil and applied directly to the haemorrhoids like ointment (MI)</li> </ul>   |

- Nausea and vomiting**
- Three young fruits (with flowers attached), three green and yellow leaves (facing east) are pounded together and rubbed all over the body and inhaled (MI)
  - One young noni fruit that has three flowers attached to it is pounded, mixed with coconut oil and smeared on the forehead and neck until nausea ceased (MI)
- As a source of vitamin A**
- One school on Ailinglaplap Atoll gives noni to children each day as their morning snack (MI)
  - Cooked leaves are fed to children to improve vitamin A deficiency induced night blindness among children (NU, KB)
- Stimulant**
- Fruits are boiled in water and consumed by old people during long fishing trips and ocean voyages (KB)
  - Scrapings from the inner bark is mixed with coconut water and consumed for endurance in long ocean voyages (YP)
  - Ripe fruits are chewed and juice consumed during ocean voyages (YP)
- Measles**
- Young leaves are pounded and used for the treatment of measles (PN)
- Hypertension**
- Ripe fruits are eaten raw as a remedy for high blood pressure (YP)
  - Leaves, roots and fruits are pounded together and squeezed out the juice and consumed to treat hypertension (YP)
- Eye infection**
- Four young fruits with attached flowers are boiled in water, cooled and consumed (YP)

<sup>A</sup> Based on survey and excerpts from Defillips *et al.* (1988), Lessa (1977), Merlin *et al.* (1992, 1993, 1994), Nandwani (2003, 2008), Salcedo (1970), Taafaki *et al.* (2006), Thaman (1990), Thaman *et al.* (2009a, b).

<sup>B</sup> Only common treatments are mentioned

<sup>C</sup> Treatment methods from individual islands/atolls are grouped under their respective States

<sup>D</sup> Abbreviations: PL = Palau; YP = Yap; GU = Guam; NM = Northern Marianas Islands; CK = Chuuk; PN = Pohnpei; KS = Kosrae; MI = Marshall Islands; NU = Nauru; KB = Kiribati

## Discussion

Traditional medicine is an integral and undisputable component of the daily economic, political and culture life of Pacific islanders (Parsons, 1985). It constitutes the response of simple island communities to cut off from the mainstream of advanced technologies and medical care to illnesses which interfere with social, economic, political and religious activities. In Micronesia, every culture has developed its own practices of treating diseases within their respective flora. They primarily relied on wild plants for medicine and other uses. Traditionally, these cultures were extremely knowledgeable about their local flora and other natural resources. Despite the exposure to western medicine, distinctive indigenous medicinal practices flourish in most of the Micronesian cultures. Most Micronesians still retain a faith in the indigenous methods of treatments performed by the traditional healers, even though they also utilize Western medicine for many health problems. The simultaneous use of both medical systems does not produce any contradiction, because the people believe some ailments are the best treated by native medicine, while others are the best treated by Western medicine. Though traditional knowledge and science progressed independently, they are now merging and promote the institutionalized knowledge and indigenous philosophies of medicine (Wimmer, 2008). Both are valid and through observation, each sees through a different knowledge base but ends up with the same results.

Finau (1994) in his consideration of traditional medicinal knowledge used in treating illnesses within the social and physical environments of a society identified the following three precepts in the practice of traditional medicine of the Pacific islands:

- **Social interactive** communication and acceptance through the use of time-honored rituals which reinforce social relationships and strengthen bonding between related and diverse groups (Parsons, 1984)
- Interactive bonding through 'gifts' of financial significance bestowed before, during and after treatment; and which in some cases, provide livelihood means for families (Finau, 1981)
- Reliance on a verbal pharmacopoeia and storehouse of traditional knowledge about plants, animals, beliefs, seasons, religions etc which perpetuate and reinforce the importance of these parameters in society and the interrelationships of its constituents (Whistler, 1985)

Medicinal plants, the oldest known health care products, play a vital role in the maintenance of human health worldwide and especially in the developing world. Their importance is linked to the availability and use of traditional intellectual property that has sustained the well-being of ancestral generations over several hundred years (DaSilva and Krishnapillai, 2007; DaSilva *et al.*, 2007).

Noni is arguably the most extensively used ingredient in traditional herbal remedies, either alone or in conjunction with other plant species. Treatments which employ noni include both topical and internal. Traditional healers in Micronesia employ every part of the noni plant: leaves, roots, bark, flowers, and fruit. Noni fruit, the most prized part of the plant, has numerous applications, including many which are listed in Table 1. Noni is also very nutritious. Intensive cultural use of this plant has driven researchers to explore for potential biological activity. Today, noni fruit is a highly prized medicinal commodity just as it was in ancient times. So far, over 250 chemical compounds were isolated from noni plant in addition to a rich array of minerals, vitamins and amino acids. It has attained significant economic importance worldwide in recent years through a variety of health and cosmetic products made from its leaves and fruits. The discovery of several chemical compounds of therapeutic significance in noni is not only for such traditional use but also for the pursuit of pharmacological research and drug development to combat emergent and new diseases which threaten human race.

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## References

- Ballack, M.J. 2009. *Ethnobotany of Pohnpei: Plants, People and Island Culture*. University of Hawaii Press, Honolulu.
- DaSilva, E.J., V.K. Murukesan, D. Nandwani, M. Taylor and P.C. Josekutty, P.C. 2004. The Pacific islands: a biotechnology resource bank of medicinal plants and traditional intellectual property. *World Journal of Microbiology and Biotechnology*, Vol. 20: 903-934.
- DaSilva, E.J. and M.V. Krishnapillai. 2007. The Pacific Islands: A Natural Treasure house of Bioresources and Island Biotechnology, in *Biotechnology*, [Eds. Horst W. Doelle, and Edgar J. DaSilva], in *Encyclopedia of Life Support Systems (EOLSS)*, Developed under the Auspices of the UNESCO, Eolss Publishers, Oxford, UK.
- DaSilva, E.J., M.V. Krishnapillai and P.G. d'Ayala. 2007. Bio-Cultural Diversity and Medicine, in *Biotechnology*, [Eds. Horst W. Doelle, and Edgar J. DaSilva], in *Encyclopedia of Life Support Systems (EOLSS)*, Developed under the Auspices of the UNESCO, Eolss Publishers, Oxford, UK.
- Defillips, R.A., S. L. Maina and L.A. Pray. 1988. The Palauan and Yap Medicinal Plant Studies of Masayoshi Okabe, 1941-1943. *Atoll Research Bulletin*, 317.
- Dixon, A.R., H. McMillen and N.L. Etkin. 1999. Ferment this: the transformation of Noni, a traditional Polynesian medicine (*Morinda citrifolia*, Rubiaceae). *Econ Bot.*, 53:51-68.
- Finau, S.A. 1981. Traditional medicine in Tonga: a preamble to a Pacific model. *Fiji Medical Journal*, 9: 93-99.



- Finzu, S.A.** 1994. Traditional Medicine in the Modern Pacific: A Dilemma or a Blessing? In: Morrison, J., Geraghty, P. and Crowl, L. (eds.), *Fauna, Flora, Food and Medicine: Science of Pacific Island Peoples*, Vol. III, Pp. 47-64. (Suva) Institute of Pacific Island Studies.
- Lessa, W.** 1977. Traditional uses of the vascular plants of Ulithi Atoll, with comparative notes. *Micronesica*, 13: 129-190.
- McClatchy, Will.** 2002. From Polynesian Healers to Health Food Stores: Changing Perspectives of *Morinda citrifolia* (Rubiaceae). *Integrative Cancer Therapies*, 1: 110-120.
- Merlin, M., D. Jano, W. Raynor, T. Keene, J. Juvik and B. Sebastian.** 1992. *Tubke en Pohnpei: Plants of Pohnpei*. East-West Center, Honolulu, Hawaii.
- Merlin, M., R. Taulung and J. Juvik.** 1993. *Sabk Kap Ac Kain In Can Kosrae: Plants and Environments of Kosrae*. East West Center, Honolulu, Hawaii.
- Merlin, M., A. Capelle, T. Keene, J. Juvik and J. Maragos.** 1994. *Keinikkan Im Melan Aelon Kein: Plants and Environments of the Marshall Islands*. East West Center, Honolulu, Hawaii.
- Nandwani, D.** 2003. Biodiversity and bio-cultural heritage in the island countries: The Marshall Islands. In: *INSULA Special Issue on Biosciences and Biotechnologies*, ed. DaSilva, E.J. pp. 35-40.
- Nandwani, D.** 2008. Medicinal plants and traditional knowledge in the Northern Mariana Islands. *Journal of Applied Biosciences* 8:323-330.
- Nandwani, D. and E.J. DaSilva.** 2003. Traditional knowledge and medicine in the Marshall Islands. In *AgroFood Industry Hi-Tech*, July-August, ed. Maini, S. pp. 42-46. Milan, Italy: *Tekno Scienze*.
- Nelson, S.C. and C.R. Elevitch.** 2006. *Noni: The Complete Guide for Consumers and Growers*. Permanent Agriculture Resources, Holualoa, Hawaii.
- Parsons, C.D.** 1984. Idioms and distress: kinship and sickness among the people of the Kingdom of Tonga. *Culture, Medicine and Psychiatry*, 8: 71-93.

- Parsons, C. D. 1985. Healing Practices in the South Pacific. Institute of Polynesian Studies, Brigham Young University-Hawaii.
- Salcedo, C. 1970. The Search for Medicinal Plants in Micronesia. *Micronesian Reporter*, 18: 10-17.
- Taafaki, I.J., M.K. Fowler and R. Thaman. 2006. Traditional Medicine of the Marshall Islands: The Women, the plants the treatments. IPS Publications, University of South Pacific, Suva, Fiji.
- Thaman, R.R. 1990. Kiribati Agroforestry; Trees, People and the Atoll Environment. *Atoll Research Bulletin*, 333.
- Thaman, R.R., D.C. Hassall and S. Takeda. 2009a. Plants of Nauru: Guide to Indigenous and Introduced Plants of Particular Cultural Importance and Weeds of Potential Threat to Nauru. Land Resources Division, Secretariat of the Pacific Community, Suva, Fiji.
- Thaman, R.R., D.C. Hassall and S. Takeda. 2009b. The Vegetation and Flora of Nauru – 2007: Current Status, Cultural Importance and Suggestions for Conservation, Restoration, Rehabilitation, Agroforestry and Food, Health and Economic Security. Report prepared for the Ministry of Commerce, Industry and Resources and the Nauru Rehabilitation Corporation, Republic of Nauru. Land Resources Division, Secretariat of the Pacific Community, Suva, Fiji.
- Whistler, W.A. 1985. Traditional and herbal medicine in the Cook Islands. *Journal of Ethnopharmacology*, 13: 239-280.
- Whistler, W.A. 1992. *Polynesian Herbal Medicine*. National Tropical Botanical Garden, Lawai, Kaua'i, Hawaii.
- Wimmer, R. 2008. Ethnomedicine to Heal the World. *Acupuncture Today*, 9 (5).

<sup>1</sup> Oceania is the collective name that is occasionally used for the islands in the Pacific Ocean, and the exact number of which is not known. A general accepted estimate is of 25,000–30,000.

It is grouped into three distinct socio-cultural regions namely Micronesia, Melanesia and Polynesia.

They were first described as *Polynesia* (a combination of the Greek *poly* and *nesos* meaning 'black' and 'islands') by Charles de Brosses, French magistrate and scholar, following his visit in 1751 and publication of his *Histoire des navigations aux terres australes* in Paris in 1756.

The grouping of islands as Melanesia (a combination of the Greek *melas* and *nesos* meaning 'black' and 'islands') results from the visit in 1824 of Jules Sebastien Cesar Dumont d'Urville, botanist and linguist. d'Urville coined this name on account of the predominant dark skin color of the inhabitants in this group of islands.

D'Urville coined the term Micronesia (a combination of the Greek *mikros* and *nesos* meaning 'small' and 'islands') to describe the thousands of small islands that constitute this grouping together of these islands.

Archaeological and linguistic evidences indicate that the islands were first discovered and settled between some 3000 years ago by settlers of Austronesian origin who brought with them horticultural skills and valuable maritime knowledge. These first settlers are thought to have migrated eastwards from Southeast Asia to Yap (Federated States of Micronesia), and then to Papua New Guinea, Solomon Islands, to Kiribati and the Marshall Islands as is evidenced from the historical Lelu ruins in Kosrae (FSM) in 1400 AD and the Nan Madol ruins of Pohnpei (1000 AD).

<sup>2</sup> Canoe plants are various important plants carried by early Polynesian settlers for their survival and well-being in voyaging canoes crisscrossing Oceania. Noni was historically known as the queen of all the canoe plants - sacred plants that Polynesian settlers were required to take when settling a new island.