

Herbs: A caravan of medicine.

N.K. Udaya Prakash, M.Sc., M.Phil., Ph.D., LQAC (USA), CIPR (WIPO – Geneva), F.B.F.I., F.M.S.I.,
President – Biologists Forum of India.

Associate Professor, Research and Development, Veltech Dr. RR Dr. SR Technical University, Avadi,
Chennai, India.

Email: nkudayaprakash@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.

Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College,
Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

American J of Bio-pharm Biochem and Life Sci 2012 March, Vol. 1 (Suppl 1): PL04

PLENARY LECTURE

Herbs are used in traditional medicine or as folklore medicine because of the use of plant by them or as plant extracts. The usage of herbs in the field of medicine can also be termed as botanical medicine, herbal medicine, and phototherapy. Plants developed their disease defense mechanism through the synthesis of chemical compounds which defend them against pests, insects, pathogens and predators. These compounds are wisely utilized by the mankind for their beneficial use in the form of Herbal Medicine. Such secondary metabolites, with varied structure are aromatic, or with bitter taste etc.

The usage of herbs and spices in culinary items has provided us the base to treat on the herbs as medicine. The usage is a response to the threat of food-borne pathogens. A clue can be obtained why the vegetables are less spiced than the meat because they are more resistant to spoilage. Learning of herbs used in medicine starts from observing the animal behavior, A research from Wesleyan University, Ohio has found that few birds select plant materials for nesting as rich in antimicrobial agents which in turn protect their young from harmful infections. Similarly following sick animals foraging on plants rich in secondary metabolites like tannins and alkaloids provide us the indication that they may be of medical importance.

Sumerians are the pioneers in usage of herbs as their medicine, evidence available through written records, the study of herbs dates back over 5,000 years. Garlic, Opium, Castor oil, Coriander and other herbs are used in Ancient Egyptian Medicine. In India, evidence on usage of Turmeric in Ayurvedic medicine was possibly as early as 1900 BC. Many other herbs used in the system of medicine were described by ancient Indian herbalists, Charaka and Sushruta during the 1st millennium BC. The Sushruta Samhita attributed to Sushruta in 6th century BC describes about 700 medicinal plants.

Herbs in the field of medicine are used by number of traditional system of medicine, i.e. Greek and Romans, Siddha and Ayurvedha in various Asian countries, Chinese herbal medicine, Traditional African

medicine, Unani – Tibb medicine, Shamanic herbal medicine in South America and Native American medicine. In addition to the use in the developing world, herbal medicine is used in industrialized nations by practitioners of alternative medicine and naturopathy. However, I differ in using the term Alternative medicine by Indians for Herbal medicine as herbal medicine is pioneer for current field of medicine. And our culture possesses it for longer period of time.

In Tamil Nadu, Tamils have their own medicinal system now popularly called the Siddha medicinal system. The Siddha system is in the language of Tamil which contains roughly 300,000 verses covering diverse aspects of medicine such as anatomy, sex, herbal, mineral and metallic compositions to cure many diseases that are relevant even today. Ayurveda and its medicines are mostly taken from Siddha and other local traditions.

Herbal therapy, or use of natural products other than vitamins and minerals, was most commonly used as Complementary and Alternative Medicine (18.9 %) - National center for complementary and alternative medicine (NCCAM) (2004) survey by western countries. The World Health Organization (WHO) estimates that 80 percent of the world's population presently uses herbal medicine for some aspect of primary health care. Pharmaceuticals are prohibitively expensive for most of the world's population in comparison with herbal medicines which can be grown from seed or gathered from nature for little or no cost.

To provide an example of plant derived drug, the active ingredient in willow bark, once prescribed by Hippocrates, is salicin when it was isolated from a plant known as meadowsweet. The word aspirin comes from an abbreviation of meadowsweet's generic name Spiraea, with an additional "A" at the beginning to acknowledge acetylation, and "in" at the end for easier pronunciation. "Aspirin" was originally a brand name, and is still a protected trademark in some countries. This medication was patented by Bayer AG.

Among the 120 active compounds currently isolated from the higher plants and widely used in modern medicine today, 80 percent show a positive correlation between their modern therapeutic use and the traditional use of the plants from which they are derived. At least 7,000 medical compounds in the modern pharmacopoeia are derived from plants. Many of the Pharmaceutical compounds currently available have a long history of use in herbal remedies, including Opium, Quinine etc.

Four approaches to the use of plants as medicine include: (a) the magical eyes to identify the herb in a way that is hidden from the average person, and the herbs are said to affect the spirit or soul of the person. (b) The energetic, i.e. Herbs are regarded as having actions in terms of their energies and affecting the energies of the body. The practitioner may have extensive training, and ideally be sensitive to energy, but need not have supernatural powers. (c) The functional dynamic, Herbs have a functional action, which is not necessarily linked to a physical compound, although often to a physiological function

and (d) The chemical, assumed that the specific combination of secondary metabolites in the plant are responsible for the activity claimed or demonstrated, a concept called synergy.

In specific cases the claims of synergy and multifunctionality have to be supported by science. The search for drugs and dietary supplements derived from plants has accelerated in recent years and the role of Non-medicos becomes prominent. To identify the specific compounds or secondary metabolites and to study anti-oxidant nature of the herb, the role of Biochemist is significant, To identify antibacterial potency of the herb, the role of Microbiologist become significant, To identify antifungal ability, the role of Mycologist become significant, To know the larvicidal potency of the herb, the role of zoologist become significant, To know the role of pesticidal activity, the role of Entomologist become significant, and so on. However, not the least, major contribution need to come from the Botanist for proper identification of the herb. Thus, the culmination of scientist working together in various fields provides greater growth in achieving herbs to be used in Medicine. In fact, according to the World Health Organization, approximately 25% of modern drugs used in the United States have been derived from plants. In 2001, researchers identified 122 compounds used in mainstream medicine which were derived from "ethnomedical" plant sources; 80% of these compounds were used in the same or related manner as the traditional ethnomedical use. In a 2010 survey of 1000 plants, 356 had clinical trials published evaluating their "pharmacological activities and therapeutic applications" while 12% of the plants, although available in the Western market, had "no substantial studies" of their properties. Thus, the role of the scientist becomes necessary to scientifically support the system of herbal medicine.

It is noticed that, more than 24,600 articles were published on the article containing PHYTOTHERAPY as a keyword in PUBMED search.

In our laboratory, the work related to identification of common herbs are carried out and the work has been extended towards studying antibacterial efficacy of Indian spices (Sampathkumar et al., 2008), Members of Myrtaceae (Bhuvanewari et al., 2010); comparative analysis on antibacterial property among common weeds (Udayaprakash et al., 2011), antibacterial potency of common weeds of Northern districts of Tamil Nadu (Udayaprakash et al., 2012), Phytochemical studies on common weeds of Northern districts of Tamil Nadu (Udayaprakash et al., 2011), Larvicidal effect of common weeds of Tamil Nadu (Udayaprakash and Bhuvanewari, 2011), Bioefficacy of *Carica papaya* (Vaishnavi and Udayaprakash, 2011), *Dodonaea viscosa* (Udayaprakash et al., 2012), Antifungal activities of common weeds (Unpublished data), Pesticidal property of common weeds (Unpublished data) and antioxidant properties of common weeds (Unpublished data) were carried out. Currently, the same on the common weeds of Tanjore district of Tamil Nadu is conducted.

Knowing the importance of herbs in medicine, State funded universities like University of East London, Middlesex University, Central Lancashire, Westminster University, University of Lincoln and Napier University are offering B.Sc., in herbal medicine in UK.

Botanical Gardens Conservation International (2008) warned that, "cures for things such as cancer and HIV may become 'extinct before they are ever found'." They identified 400 medicinal plants at risk of extinction from over-collection and deforestation, threatening the discovery of future cures for disease. Yew (the bark is used for the cancer drug Taxol and Paclitaxel), Hoodia (potential source of drug for weight loss); Magnolia trees (medicine to fight cancer and heart disease) are becoming extinct to name the few. . Their report said that "five billion people still rely on traditional plant-based medicine as their primary form of health care.

SO LET US KNOW OUR ROLE IN SAVING OUR HERBS TO SERVE OUR INDIAN SYSTEM OF MEDICINE

References:

1. B. Sampath Kumar., S. Bhuvanewari., S. Dhanalakshmi., M. Vijayalakshmi and N.K. Udaya Prakash (2008). A Study on Antibacterial efficacy of some Indian Spices. Indian Journal of Applied Microbiology. 9 (1): 48-50.
2. Bhuvanewari., S. Pandian., S. Senthilkumar and N.K. Udaya Prakash, 2010. A Study on comparison of Antibacterial potency of Members of Myrtaceae. Indian Journal of Applied Microbiology. 12 (1): 59-62.
3. N.K. Udaya Prakash., S. Bhuvanewari., R. Aravind., V. Kaviyaran., K. Kalaivannan and H. Sekar Babu, 2011. A comparative study on antibacterial activity of common weeds. Intl. Journ. of Pharma and Bio Sci. 2 (1): 66-70.
4. N.K. Udaya Prakash., B. Jahnavi., K. Abhinaya., A. Gulbsy Rajalin., H. Sekar Babu., M. Prathap kumar., K. Upendra Reddu. K. Dushyanth Reddy, G. Sundraraman., K. Elumalai., S. Devipriya., V. Kannan., V. Sriraman., R.A. Kalaivani., M. Thanmathi., G. Kathiravan and S. Bhuvanewari, 2011. Phytochemical analysis of common weeds of Northern Districts of Tamil Nadu, Intl. J. of Appl. Biol. 2 (1): 25-28.
5. S. Vaishnavi Devi and N.K. Udaya Prakash, 2011. A study on Phytochemistry, Antimicrobial, Antifungal and Antioxidant properties of male flower of *Carica papaya* L. Intl. J. of Appl. Biol. 2 (3): 25-28.
6. N.K. Udaya Prakash and S. Bhuvanewari Udaya Prakash, 2011. A preliminary investigation on larvicidal activity of common weeds in Tamil Nadu. Proceedings: International Conference on Frontiers in Pharmaceutical Chemistry and Biologics- An interdisciplinary approach. Excel India Publ. 90-93.
7. N.K. Udaya Prakash., S. Bhuvanewari, B. Jahnavi., K. Abhinaya., A. Gulbsy Rajalin., M. Prathap kumar., G. Sundraraman., K. Elumalai., S. Devipriya., V. Kannan., V. Sriraman and G. Kathiravan, 2012. A study on antibacterial activity of common weeds of Northern districts of Tamil Nadu, India. Res. J of Med. Plants, 6(1): 1-5.

8. N.K. Udaya Prakash., C.R. Selvi., V. Sasikala., S. Dhanalakshmi and S. Bhuvanewari Udaya Prakash, 2012. Phytochemistry and Bio-efficacy of a weed, *Dodonaea viscosa*. International J. of Pharma and Pharmaceutical Sciences 4(1): 32-38.

AJBBL