Ethnomedicinal and Ecological studies of some weeds in sugarcane fields of Villupuram district

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ABSTRACT

The present communication pertains to ethnobotany of major weeds of sugarcane fields in Villupuram district, Tamil Nadu. Present study was conducted in ten selected sites of Villupuram district in the sugarcane crop fields. Random quadrate method was adopted for studying phytosociological attributes of weeds. A total of 80 plant species belonging to 25 families were identified, out of which 46 plant species are medicinally important to cure different diseases in human beings directly. Amaranthaceae and Euphorbiaceae was the dominant family seen during observation. Frequency, Relative frequency, Density and Relative density of the species were calculated.

Keywords: Weeds; Sugarcane field; Ethnobotany

1. INTRODUCTION

Plants are to be found everywhere. Man tries to grow only the sort of plants that he wants and the original inhabitants of the soil become useless to him are called as weeds. When land is cultivated to raise crops, weeds spring up naturally along with the crop plants. Quite a number of plants considered as weeds in modern sciences have significant value in ethnobotany. Ethnobotany is a multidisciplinary science defined as the interaction between plants and people. The relationship between plants and human culture is not limited to the use of plants for food, clothing and shelter but also includes their use for religious ceremonies, ornamentation and health care. The World Health Organization (WHO) has estimated that up to 80 % of the world’s populations rely on plants for their primary health care (Ramesh, 2008; Akaneme et al., 2008). Weeds are unwanted and undesirable plants growing in a place where some other desirable plants are grown or where no plantation is needed at all. The plants growing in agricultural fields, having more negative values and competing with the main crops for soil, water, nutrients etc are known as weeds (Ali et al., 2003). However, weed is a relative term loaded with value endowed by human beings in relation to their own activities and it is in anthrocentric concept rather than an absolute quality. Wild plants grow in all type weather condition but winter and rainy season is most conductive for the growth of plants. These weeds would be great source of herbal medicines.

Allopathic drugs have brought a revolution throughout the world, but the plant based medicines have its own status (Ahmad 2003). The local uses of plants as a cure are common particularly in those areas, which have little or no assess to modern health services. Hence
due to less communication means, poverty, ignorance and unavailability of medicinal facilities, most people of especially rural people still forced to practice traditional medicines for their treatment, and also forgetting about indigenous knowledge of plants. But most of the people especially old people still possess the knowledge about wild resources (Zhang 1996). Nath et al. (2007) described ethnomedicinal aspects of 38 species of weeds of Darrang district of Assam. According to Saika and Hassain (2005) weeds are highly efficacious as medicine against common diseases and other health problems of man. Hence an attempt has been made to survey the ethnomedicinal weeds present in the sugarcane fields of Villupuram district, Tamil Nadu.

2. MATERIALS AND METHODS

2.1. Study area

The Villupuram district extends over an area of 8204.63 sq. Km, is situated in the south eastern portion of Tamil Nadu. It is bounded on the north by Thiruvannamalai and Kanchipuram districts on the east by the Bay of Bengal, on the south by the district of Cuddalore and on the west by Salem and a part of Dharmapuri districts. The average maximum and minimum temperature ranges from 32.78° C to 24.08° C respectively. The district lies between 11° 57' N latitude and 79° 32' E longitude.

2.2. Methodology

Present study was conducted in ten selected sites of Villupuram district in the sugarcane crop fields. Random quadrate method was adopted for studying phytosociological attributes of weeds. Quadrates of 1’× 1’ m were laid down and hence a sum of 60 quadrates was laid. All the weeds from each quadrates were collected separately in polythene bags. The information regarding the local name, plant parts used, name of the diseases cured and the process of administration were collected with the help of rural people, village vaidyas and aged elders. A questionnaire was prepared in the local language for collection of ethic information and interviews were conducted. The collection of information was accompanied by the collection of voucher specimens. The plants were pressed, following the standard technique (Cunningham, 2001). Identification of collected specimens was done with the help of literature. Ethnomedicinal data obtained in the field were complied and compared with the published references of Srivastava et al. (2000), Prajapathi and Khana (2004) and Jadeja et al. (2004). Frequency, Relative frequency, Density and Relative density of the species were calculated by using formulae.

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\text{Frequency (\%)} = \frac{\text{Total number of quadrats in which the species occur}}{\text{Total number of quadrats studied}} \times 100
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$$
\text{Relative Frequency (\%)} = \frac{\text{Frequency of individuals of a species}}{\text{Total frequency of all species}} \times 100
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3. RESULTS AND DISCUSSION

Present study is undertaken with a view to explore the source, purpose and method of use of different plant resources of Villupuram district. The present survey was done to record the overall relationship of the local people with plant resources. The information obtained from the various sources of the area of study has been given in the Table 1.

Table 1. Survey of ethnomedicinal plants in the sugarcane field.

| S. No. | Botanical Name        | Family            | Vernacular Name | Parts used | Uses                  |
|-------|-----------------------|-------------------|-----------------|------------|-----------------------|
| 1.    | Abutilon indicum L.   | Malvaceae         | Thuthi          | Leaves, flowers | Urinary infection, Piles |
| 2.    | Acalypha indica L.    | Euphorbiaceae     | Kuppaimaeni     | Whole plant  | Anthelmintic, Ulcers   |
| 3.    | Achyranthes aspera L. | Amaranthaceae     | Naayurvi        | Leaves, seeds | Urinary and skin diseases |
| 4.    | Adhatoda zeylanica Nees. | Acanthaceae      | Adhatoda        | Leaves, roots | Tuberculosis, Ulcer, Piles |
| No. | Common Name | Family | Scientific Name | Part Used | Uses |
|-----|-------------|--------|-----------------|-----------|------|
| 5.  | Alternanthera sessilis | Amaranthaceae | Alternanthera sessilis R.br.ex D C | Whole plant | Eye diseases, body cool, Ulcer |
| 6.  | Amaranthus spinosus L. | Amaranthaceae | Amaranthus spinosus L. | Whole plant | Mouthwash, Toothache |
| 7.  | Amaranthus tricolor L. | Amaranthaceae | Amaranthus tricolor L. | leaves, roots | Blood pressure |
| 8.  | Amaranthus viridis L. | Amaranthaceae | Amaranthus viridis L. | leaves, roots | Skin diseases, Blood pressure |
| 9.  | Boerrhavia diffusa L. | Nyctaginaceae | Boerrhavia diffusa L. | leaves, roots | Eye infection, Anaemia |
| 10. | Cardiospermum helicacabum L. | Sapindaceae | Cardiospermum helicacabum L. | Whole plant | Fever, Eye complaints, Blood pressure |
| 11. | Centella asiatica Urb. | Apiaceae | Centella asiatica Urb. | Whole plant | Cooling, carminative, Asthma |
|     | Boerrhavia diffusa L. | Nyctaginaceae | Amaranthaceae | leaves, roots | Eye infection, Anaemia |
|     | Amaranthus spinosus L. | Amaranthaceae | Amaranthaceae | leaves, roots | Skin diseases, Blood pressure |
|     | Amaranthus tricolor L. | Amaranthaceae | Amaranthaceae | leaves, roots | Blood pressure |
|     | Amaranthus viridis L. | Amaranthaceae | Amaranthaceae | leaves, roots | Eye disease, body cool, Ulcer |
| No. | Scientific Name | Family | Popular Name | Part Used | Medical Uses |
|-----|----------------|--------|--------------|-----------|--------------|
| 12. | Chloris barbata Sw. | Poaceae | Corajillu | Roots | Cold, Rheumatism |
| 13. | Cleome visciosa L. | Cleomaceae | Vaclakeerai | Whole plant | Wounds, Earache |
| 14. | Clitoria ternatea L. | Fabaceae | Sangupoo | Roots, Leaves | Skin diseases, Asthma |
| 15. | Coccinia indica Vogt. | Cucurbitaceae | Kovaikai | Roots, Fruits | Asthma, Diabetes |
| 16. | Croton sparciflorus Mor. | Euphorbiaceae | Railpoondu | Roots | Cough, Fever, Vomiting |
| 17. | Cynodon dactylon Pers. | Poaceae | Arungamul | Tuber | Skin diseases |
| 18. | Commelina benghalensis Schult. F. | Commelinaceae | Kammaikuzhai | Whole plant | Cancer, Ulcer, Skin diseases |
| 19. | Cyperus rotundus L. | Cyperaceae | Korajill | Whole plant | Vomiting, Wounds |
| No. | Species                  | Family      | Common Name | Part Used       | Uses                                    |
|-----|--------------------------|-------------|-------------|-----------------|-----------------------------------------|
| 20  | *Cyperus scariosus* R. Br. | Cyperaceae  | Poonkorai   | Tubers          | Stomach pain, Washing hair              |
| 21  | *Eclipta alba* Hassk.    | Asteraceae  | Karisaalankari | Whole plant    | Chronic diseases, Cough                 |
| 22  | *Euphorbia hirta* L.     | Euphorbiaceae | Ammanipacharsi | Whole plant    | Cough, Breast pain, asthma              |
| 23  | *Heliotropium indicum* L. | Boraginaceae | Siruthaelkoduku | Whole plant    |                           |
| 24  | *Hygrophila auriculata* L. | Acanthaceae | Neermuli     | Roots, Seeds   | Cough, Fever, Wounds                    |
| 25  | *Lantana camara* L.      | Verbenaceae | Karuvipo     | Whole plant    | Ucers, Wounds, asthma                   |
| 26  | *Leucas aspera* Spr.     | Lamiaceae   | Thumbai      | Leaves, flowers | Dyspepsia, Verminosis                   |
|   | Scientific Name | Family   | Common Name | Part Used | Medical Uses  |
|---|----------------|----------|-------------|-----------|---------------|
| 27. | *Lippia nudiflora* Mich. | Verbinaceae | Poduthalai | Whole plant | Ulcers, Wounds, Asthma |
| 28. | *Mimosa pudica* L. | Mimosaceae | Thottaa sinungi | Whole plant | Dysentry, Asthma |
| 29. | *Mullugo oppositifolia* L. | Aizoaceae | Paapadagam | Whole plant | Dysentry |
| 30. | *Mukia madraspatria* Cogn. | Guerbitaceae | Musumusukkai | Leaves, Seeds | Chronic diseases, Cough |
| 31. | *Ocimum canum* Sims. | Lamiaeae | Naanthalasi | Whole plant | Cough, Dysentry |
| 32. | *Parthenium hysterophorus* L. | Asteraceae | Parthenium | Whole plant | Dysentry |
| 33. | *Pergularia daemia* Garg. | Asclepiadaceae | Veelipanathi | Leaves, fruit | Child birth |
| No. | Common Name | Latin Name | Family | Part(s) Used | Uses |
|-----|-------------|------------|--------|--------------|------|
| 34. | Portulaca | *Portulaca oleracea* L. | Portulacaceae | Leaves | Dysentry, Haemorrhoids |
| 35. | Passalai | *Phyllanthus amarus* L. | Euphorbiaceae | Keelaneli | Whole plant | Stomach pain, Ulcer, fever |
| 36. | Keelaneli | *Physalis minima* L. | Solanaceae | Thoolakkai | Whole plant |
| 37. | Thoolakkai | *Ricinus communis* L. | Euphorbiaceae | Aamanakku | Whole plant |
| 38. | Aamanakku | *Sida acuta* Bum. | Malvaceae | Arivaalmunai | Whole plant |
| 39. | Arivaalmunai | *Physalis minima* L. | Euphorbiaceae | poondu | Whole plant |
| 40. | Poondu | *Solanum nigrum* L. | Solanaceae | Levaas, roots | Swelling, Blood clot |
| 41. | Levaas, roots | *Solanum xanthocarpum* Sch. & Wendl. | Solanaceae | Thoodhuvalai | Whole plant |
| 42. | Thoodhuvalai | *Solanum aculeastrum* Sch. & Wendl. | Solanaceae | Kandankathiri | Whole plant |
| 43. | Kandankathiri | *Solanum trilobatum* L. | Solanaceae | Cold, Pain, Cough | Cold, Pain, Cough |
| 44. | Cold, Pain, Cough | *Solanum xanthocarpum* Sch. & Wendl. | Solanaceae | Kandankathiri | Whole plant |
| 45. | Kandankathiri | *Solanum xanthocarpum* Sch. & Wendl. | Solanaceae | Whole plant | Cough |
Observation indicated that weed species collected from crop fields are being used to cure different human diseases. Out of 153 weeds studied, 46 weeds are of medicinally important and useful to cure various diseases. Amaranthaceae and Euphorbiaceae was the dominant families present with five genera, Asteraceae (4), Verbinaceae (3), Solanaceae (3), Acanthaceae (2), Cucurbitaceae (2), Cyperaceae (2), Malvaceae (2), Poaceae (2), Lamiaceae (2), followed by Asclepiadaceae, Cleomaceae, Nyctaginaceae, Sapindaceae, Apiaceae, Fabaceae, Commelinaceae, Boraginaceae, Mimosaceae, Aizoaceae, Portulaceae, Rutaceae and Zygophyllaceae. The relative frequency of Cardiospermum, Centella, Chloris and Commelina species was higher than other plants. Phytosociological attributes of sugarcane field is given in Fig. 1, 2, 3 and 4.
On the traditional uses of weeds a little work has been carried out in India. Weeds play an important role in ayurvedic medicine. Saikia and Hussain (2005) collected information on medicinal aspects of some weeds used by the Ahan and Khamti communities of Sivasagar. The present report coincides with the earlier reports of Adi Seshu (1997), Tomar (2009) and Prayagamurthy (2009). Workers like Dangwal et al. (2010) and Perira (1998) have worked on weed flora and their management in other areas of India.

4. CONCLUSION

Awareness should be carried out to the local peoples to use these weeds as medicine and to practice them in their day today life. The various uses of these weeds may aid dealers in crude drugs manufactures of plant products or persons interested in the beneficial aspects.
of plants. Hence it is concluded that weeds present in the sugarcane fields can be used as medicines directly or in ayurvedic medicine in large scale.

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