

Investigation of Various Plants Naturally Grown in Yaw Region for the Purpose of Preparation of Myanmar Indigenous Medicine

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Abstract

Some plants naturally grown in the Yaw region located in the northwest of Myanmar were analyzed by the EDXRF spectrometer with a view to understanding of their usefulness in the development of Myanmar indigenous medicines. The results obtained show that the plants of interest are usable in the development of indigenous medicines for the treatment of some diseases.

1. Introduction

Myanmar is rich in biodiversity. The naturally grown plants in Myanmar are useful for the preparation of the traditional medicines in one way or another. An herb, which is a plant or one part of a plant, consists of some chemical substances that act upon the human body. Herbs have been used by all cultures throughout history. Even now, 75% of human population depends on herbal medicines. In addition, about 50% of modern medicines, commonly used today are of herbal origin. Major pharmaceutical companies are currently conducting extensive research on plant materials collected from the rain forests and the other places to investigate their potential medicinal values. Substances derived from the plants remain the basis for a large proportion of the commercial medications used today for the treatment of heart disease, high blood pressure, asthma and other problems.^[1]

In Myanmar, priority is given to wipe out six common diseases namely malaria, tuberculosis, diarrhea, dysentery, hypertension, and diabetes with the help of Myanmar traditional medicines. The present work is a part of the project on the study of Myanmar indigenous medicinal plants with a view to understanding of their chemical and biological properties for the treatment of those diseases. Some medicinal plants in the vicinity of the Say Gyi Taung (Say Gyi Hill) in the Myaing Township of Yaw region, the northwestern part of Myanmar (Fig.1) were gathered as samples of interest.

2. Experimental

A total of 17 samples of the indigenous medicinal plants shown in Table.1 were analyzed using Energy Dispersive X-ray Fluorescence (EDXRF) technique. The Shimadzu EDX-700 x-ray spectrometer system at Universities' Research Centre (URC), Yangon University was used in this research. The diagram of experimental set-up of EDX-700 x-ray Spectrometer is shown in Fig.2. The EDX-700 is a compact high performance EDXRF analyzer. The analyzer consists of an x-ray tube excitation source with a Rh-target and a Si(Li) solid state detector to provide simultaneous spectroscopic analysis of elements ranging from sodium(Na) to uranium(U) with a range of concentrations from a few parts per million(ppm) to 100% of weight percent(w%). The data analysis can be performed by a personal computer(PC) connected to the system.^[2]

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Fig.1 Map Showing Location of Yaw Area

Table.1 Some Medicinal Plant Samples Collected from Yaw Region^[3]

Local Name	Botanical Name	Family Name
1. Khusan	<i>Hymenodictyon excelsum</i> Wall	Rubiaceae
2. Ni-bar Say	<i>Morinda tinctoria</i> Roxb.	Rubiaceae
3. Ka-bound Gyi	<i>Strychnos nux vomica</i> Linn.	Loganiaceae
4. Upa Thaka	<i>Hemidesmus indicus</i> R.Br.	Asclepiadaceae
5. Na-ma-ni Than-hlyat	<i>Capparis horrida</i> Linn.	Capparidaceae
6. Tapasay	<i>Clerodendrum phlomides</i> Linn.	Verbenaceae
7. Thit-palwe	<i>Balanites triflora</i> Van Tiegh.	Simarubaceae
8. Su-gauk Net	<i>Caesalpinia nuga</i> Ait.	Caesalpinaceae
9. Yin Byar	<i>Dichroa febrifuga</i> Lour.	Saxifragaceae
10. Ohndon	<i>Litsaea glutinosa</i> C.B.Robins	Lauraceae
11. Sayga Gyi	<i>Andrographis paniculata</i> Nees	Acanthaceae
12. Gwe-dauk Nwe	<i>Dregea volubilis</i> Benth.	Asclepiadaceae
13. Aw-lè	<i>Sapium baccatum</i> Roxb.	Euphorbiaceae
14. Mo-hnan	<i>Azima sarmentosa</i> Benth.	Salvadoraceae
15. Sun Let Thè	<i>Caesalpinia digyna</i> Rottl.	Caesalpinaceae
16. Sin-don-ma-nwe	<i>Tinospora cordifolia</i> Miers.	Menispermaceae
17. Let Htok Gyi	<i>Holarrhena antidysenterica</i>	Apocynaceae

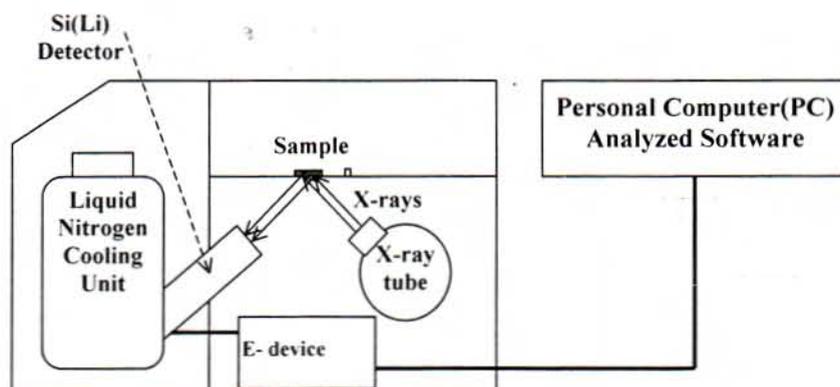


Fig.2 The diagram of experimental set-up of EDX-700 spectrometer

3. Sample preparation

The samples of interest were made into fine powder and then pellets using hydraulic press. Each pellet was then used as a specimen to be analyzed by the EDX-700 spectrometer. The measuring time for each pellet was set 100 seconds.

4. Results and Discussion

The values of concentrations of elements contained in the samples of interest obtained from this work are shown in Tables 2(a) and 2(b). It is obvious from these Tables that the samples contains potassium(K) and calcium(Ca) as the dominant elements. All the samples contains iron but less contributions.

Table 2(a) Relative concentration of elements contained in the samples of interest

Sample Element	Relative Concentration (%w)								
	Khu San	Nibar Say	Ka-bound Gyi	Upa Thaka	Na-ma-ni-than-hlyat	Tapasay	Thit-palwe	Su-gauk Net	Yin Byar
K	42.656	32.550	21.881	37.646	37.184	38.296	31.397	25.566	26.666
Ca	36.856	54.340	50.893	59.130	30.881	39.979	50.368	51.894	66.112
Cl	7.972	-	-	-	-	-	13.473	-	-
Mg	4.836	-	-	-	-	-	-	-	-
Si	3.407	-	4.968	-	10.919	8.711	-	2.758	2.295
Fe	2.277	9.783	4.203	1.505	8.665	8.665	2.312	0.857	3.117
P	1.283	-	-	-	0.830	1.296	-	-	-
S	0.365	1.633	0.785	-	10.899	0.436	1.191	17.393	0.543
Sr	0.347	-	0.743	1.015	0.622	0.469	1.172	1.378	0.795
Sc	-	1.694	-	-	-	-	-	-	-
Ni	-	-	12.380	-	-	-	-	-	-
Mn	-	-	4.147	-	-	0.529	-	-	-
Cu	-	-	-	0.623	-	-	-	-	-
Zr	-	-	-	0.080	-	-	0.086	0.154	-
Zn	-	-	-	-	-	0.347	-	-	0.472
Ti	-	-	-	-	-	1.283	-	-	-

Table 2(b)Relative concentration of elements contained in the samples of interest

Sample Element	Relative Concentration (%w)							
	Ohndon	Sayga Gyi	Gwe-dauk Nwe	Aw-le	Mo-hnan	Sun Let The'	Sin-don-ma-nwe	Let Htok Gyi
K	24.253	35.753	25.253	31.617	19.111	14.183	38.300	24.616
Ca	69.246	41.835	58.291	53.851	59.927	64.470	49.869	67.829
Cl	-	-	8.655	-	-	-	-	-
Mg	-	-	-	-	-	-	-	-
Si	2.232	8.190	1.999	4.626	8.723	-	-	-
Fe	3.197	8.322	1.965	8.189	8.847	0.940	4.884	7.555
P	-	3.318	0.801	-	-	-	1.035	-
S	0.389	2.582	2.159	1.717	-	18.617	1.490	-
Sr	0.683	-	0.868	-	3.393	1.663	-	-
Sc	-	-	-	-	-	-	-	-
Ni	-	-	-	-	-	-	-	-
Mn	-	-	-	-	-	-	-	-
Cu	-	-	-	-	-	-	-	-
Zr	-	-	-	-	-	0.128	-	-
Zn	-	-	-	-	-	-	-	-
Ti	-	-	-	-	-	-	-	-

It is learned from the data stated in the above Tables, Khu San, Upa Thaka and Tapasay can be used in the preparation of the Myanmar indigenous medicines for the cure of hypertension and headache. Nibar Say, Ka-bound Gyi, Upa Thaka, Thitpalwe, Su-Gauk Net and Yin Bar are useful for the preparation of medicines for the treatment of diarrhea. Other plants can be used as one ingredient in medicines for the skin care.

5. Conclusion

According to the results obtained, it was found that the plants of interest are free from the heavy metal toxic elements such as mercury (Hg), lead (Pb), arsenic (As), nickel (Ni) and antimony (Sb). Man's search for medicinally active substances does not end at herbs (higher plants). Lower plants such as algae, fungi, microbes and the animal kingdom have yielded a rich wealth of therapeutic, cosmetic or nutritional substances to mankind since time immemorial. We will continue this research to obtain the better knowledge of their usefulness for the development of the indigenous medicines.

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