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Variation of amino acid Content in Leaves of Medicinal Plants

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ABSTRACT

The seasonal variation of amino acid have been investigated in medicinal plants. The leaves of *Menthaspicata* (Spearmint), *Azadirachtaindica* (Neem), *Murraya Koenigii* (Curry leaves) and *Coriandrum Sativum* (Coriander), which are medicinally important throughout the world. The leaves of*Coriandrum Sativum* (Coriander) showed the highest level of amino acid 4.54 mg/g. The leaves *Murraya Koenigii* (Curry leaves) showed 2.73 mg/g of amino acid. The leaves of *Menthaspicata* showed the level of glycine as (3.55 mg/g *Azadirachtaindica* contained 2.82 mg/g of amino acidas the highest level in different seasons

Key words: Amino acid, medicinal plants.

INTRODUCTION

Amino acids are found as basic building units (monomer) of proteins.Proteins are polymers of amino acids which are linked to each other by peptide bonds (-Co - NH). Amino acids are the organic compounds that contain a basic amino (-NH) and an acidic carboxyl (-COOH) group thus , they possess both acidic and basic properties*Menthaspicata*(Spearmint) is an aromatic herb of temperate region. The oil and its principle aroma compound menthol have cooling and gastro – stimulant properties.[1] Several species of genus *Mentha*belonging to Labiatae family are called Mint. It is commonly called garden mint or pudina. It is good culinary herb. It contains essential oil and are medicinally useful. It is used in pharmaceutical, food flavor, confectionary, cosmetics, beverages and related industries.

*Azadirachtaindica*commonly known as Margosa tree, Neem, Kadu nimbi. The tree occurs naturally in Deccan peninsula but cultivated all over India. It has got medicinal value. The decoction of leaves is bitter tonic and useful in chronic malarial fever because of its action on liver.

Poultice, decoction or ointment of leaves is very useful on skin diseases, ulcers, swelling or wound. Neem is one of the most important multipurpose tree species. It uses in prevention of soil erosion and improvement of soil microclimate as well as it is good for fuel and timber wood.[2] Every part of this tree has a great commercial value whereas the oil extracted from the seeds used into soap, waxes, lubricants and fuels for lighting and heating. Curry leaves (Murrayakoenigii) is a tropical to sub-tropical tree in the family Rutaceae, which is native to India. The leaves are used in Ayurvedic medicine. Their properties include anti-diabetic, antioxidant, antimicrobial, anti-inflammatory, hepatoprotective and anti-hypercholesterolemic.[3]MurrayaKoenigii (Curry leaves) is an important perennial tree vegetable. Its leaves are used mainly to improve the taste and flavor of foods. Leaves are slightly pungent and retain their flavor even after drying. Ground curry leaf with mature coconut kernel and spices forms an excellent preserve. It grows wild in the foothills and plains of Himalayas from Kumaon to Sikkim. In South India especially in Tamil Nadu, Kerala & Karnataka at least one curry leaf plant is found in each home. Recently it hasgained importance as a commercial crop. It is cultivated commercially in Tamil Nadu & Karnataka. It is also cultivated in West Bengal, Assam & Deccan Plateau [1]. Coriander (Coriandrumsativum) is an annual herb in the family Apiaceae. CoriandrumSativum (Coriander) is used as common flavouring substance. The stem leaves and fruits have a pleasant aroma. The whole young plant is used in preparing Chutney. Its leaves are used for flavouring curries, pickeling spices, sauces and seasonings[3]. In medicine its seeds are used as a carminative, refrigerant and diuretic. It is also used as a stimulant & antiseptic properties. Oil of Coriander is used to flavor beverages such as gin, whisky, etc[1]. In India Coriander is cultivated in Andhra Pradesh, Rajasthan, Madhya Pradesh, Karnataka, Tamil Nadu & U.P.

MATERIAL AND METHODS

The fresh leaves of Spearmint - *Mentha*spicata and *Azadirachtaindica* , MurrayaKoenigii (Curry leaves) and CoriandrumSativum (Coriander) were collected from the fields during different seasons *viz.* summer (April), monsoon (June) and winter (November) for estimation of amino acidie glycine. Estimation of glycine was done by the method of Krishnamoorthy*et al.* (1989)

500 mg plant material was grounded in mortar and pastel with few drops of cold 80% ethanol. Then 2.5 ml of distilled water and 25 ml of boiling ethanol 80% ethanol were added to it. The extract was centrifuged for 15 minutes at 10,000 rpm. Residue was discarded. The supernatent was collected and total volume was made to 30 ml with distilled water. 1 ml of the sample was taken in a test tube and alcoholic ninhydrin was added to it. Test tubes were kept at 60°C for twenty minutes. The test tubes were cooled and read at 420 nm in Spectrophotometer. Glycine was used as standard.

RESULT AND DISCUSSION

The glycine content of leaves of Spearmint - *Menthaspicata*was highest in summer (3.55 mg/g) as compared to monsoon (1.28 mg/g) and winter (0.73 mg/g). In *Azadirachtaindica*leaves the highest reading was also observed in summer (2.82 mg/g) as compared to monsoon (1.07mg/g) and winter (0.76 mg/g). The glycine content of leaves of MurrayaKoenigii (Curry leaves) was highest in summer 2.73 mg/g as compared to monsoon season 1.10 mg/g and winter season 0.71/g. In CoriandrumSativum (Coriander) leave also the highest reading was observed in summer season 4.54 mg/ g as compared to monsoon 1.28 mg/g and winter 2.55 mg/g as shown in table 1. DeepaGarget. al[4] investigated the Total content of phenols, carotenes, tannins and flavonoids was quantitatively estimated from leaves of lemon grass, mint, coriander and curry leaves. Among the herbs investigated by us lemon grass exhibited the maximum content of phenols and hence greatest antioxidant profile. Mint showed significant concentration of phenols and thus good activity against deleterious oxidants. HananHelmyLatifet. al[5] did a new study on Egyptian coriander for enhancing total amino acids, some phytohormones (Indol 3- acetic acid, Gibberellic acid and Abscisic acid) and percent volatile oil content by low doses of gamma irradiation. These results suggested that low gamma-irradiation dose (80Gy) of coriander seeds could be used as simple techniques to produce seedlings with high quantities of healthy metabolites for human consumption. It was concluded in the present study and observed on investigating that the glycine content was more in the leaves than bark of both the plants. It is shown graphically. (Figure 1)

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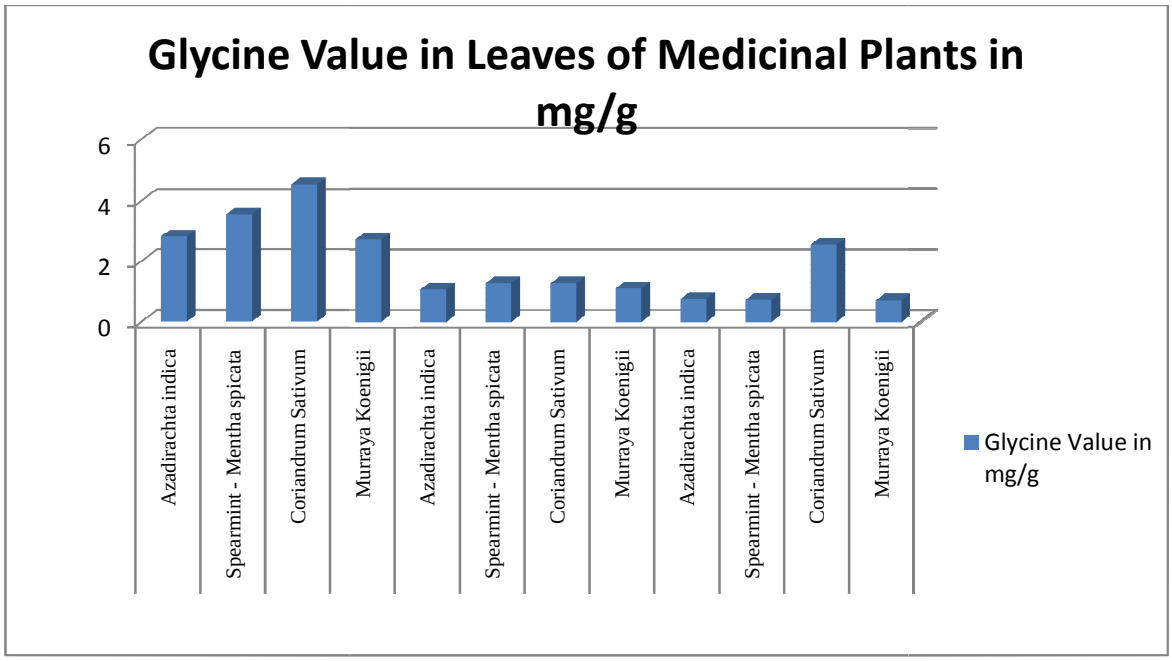
TABLE 1

Season	Plant name	Glycine Value in mg/g
Summer	*Azadirachtaindica*	2.82
	Spearmint - Menthaspicata	3.55
	CoriandrumSativum	4.54
	MurrayaKoenigii	2.73
Monsoon	*Azadirachtaindica*	1.07
	Spearmint - Menthaspicata	1.28
	CoriandrumSativum	1.28
	MurrayaKoenigii	1.10
Winter	*Azadirachtaindica*	0.76
	Spearmint - Menthaspicata	0.73
	CoriandrumSativum	2.55
	MurrayaKoenigii	0.71

Figure 1


Glycine Value in Leaves of Medicinal Plants in mg/g
6
4
2
0
Azadirachta indica
Spearmint - Mentha spicata
Coriandrum Sativum
Murraya Koenigii
Azadirachta indica
Spearmint - Mentha spicata
Coriandrum Sativum
Murraya Koenigii
Azadirachta indica
Spearmint - Mentha spicata
Coriandrum Sativum
Murraya Koenigii
Glycine Value in mg/g