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Seasonal Variation in Glycine Content of Two Medicinal Plants

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Abstract: *The seasonal variation of amino acid (Glycine) have been investigated in leaves and bark of Murraya Koenigii (Curry leaves) and Coriandrum Sativum (Coriander) which are medicinally important throughout the world. The leaves & bark of Murraya Koenigii (Curry leaves) showed the highest level of amino acid in summer 2.73 mg/g and 1.82 mg/g amino acid in monsoon season respectively. The leaves and bark of Coriandrum Sativum (Coriander) showed the highest level of amino acid in summer 4.54 mg/g and 3.64 mg/g amino acid season respectively.*

Keywords*: Amino acid, leaves, Bark, medicinal plants.*

1. Introduction

Every plant like any organism has the basic component of living cells. The basic component of living cells is Proteins, with building block material, Amino Acids. Proteins are formed by sequence of Amino Acids. Plants synthesize Amino Acids from the Primary elements, the Carbon and Oxygen obtained from air, Hydrogen from water in the soil, forming Carbon Hydrate by means of photosynthesis and combining it with the Nitrogen which the plants obtain from the soil, leading to synthesis of amino acids. Amino Acids are fundamental ingredients in the process of Protein Synthesis. About 20 important Amino Acids are involved in the process of each function. Studies have proved that Amino Acids can directly or indirectly influence the physiological activities of the plant.

Curry leaves (Murraya koenigii) 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 [4,9]

Murraya Koenigii (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 has gained 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 (Coriandrum sativum) is an annual herb in the family Apiaceae. Coriandrum Sativum (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 [6].

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 [8].

In India Coriander is cultivated in Andhra Pradesh, Rajasthan, Madhya Pradesh, Karnataka, Tamil Nadu & U.P.

Coriander has been used as a folk medicine for the relief of anxiety and insomnia in Iran. Experiments in mice support its use as an anxiolytic . Seeds are used as a drug for indigestion, against worms, rheumatism and pain in the joints. Recent studies have also demonstrated hypoglycaemic action and effects on carbohydrate metabolism ([2, 3].

The green leafy vegetables are rich sources of vitamins as well as minerals and fiber.

2. Material and Methods

The plant material fresh leaves and bark of Murraya Koenigii (Curry leaves) and Coriandrum Sativum (Coriander) were collected from the fields during different seasons viz. summer (April), Monsoon (June) and winter (November) for estimation of Amino acid.

Estimation of amino acid was made by method of Krishnamoorthy et.al (1989) method. 500 mg plant material was grounded in mortar and pestle 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 supernanent 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.

3. Result & Discussion

The glycine content of leaves of Murraya Koenigii (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 Coriandrum Sativum (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. The value of glycine content in the bark of Murraya Koenigii (Curry leaves) ranged from 1.73 mg/g to 1.82 mg/g in summer and monsoon respectively where as it was 1.43 mg / g in winter season. The bark of Coriandrum Sativum

1(Coriander) contained highest amount of glycine in summer 3.64 mg/ g and lowest in monsoon 0.71mg/g where as it was 0.73mg/g in winter. (Table 1)

If we compare both the value of glycine in leaves of both the plants it showed that the leaves of Coriandrum Sativum (Coriander) is highest in summer season 4.54mg/g and lowest in Murraya Koenigii (Curry leaves) 0.71 mg/g in winter season. The seasonal variation in the values of glycine content in bark of both the plants showed that it was maximum in Coriandrum Sativum (Coriander) during summer 3.64 mg/g and it was minimum in during winter ie. 0.71mg/g.

Deepa Garg et. al [(5)] 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.

Hanan Helmy Latif et. al [(7)] 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)

4. References

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Annexture

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S.N	Name of plant	Plant part	Season	Glycine mg/g
1	*Murraya Koenigii*	Leaves	Summer	2.73
Monsoon	1.10			
Winter	0.71			
Bark	Summer	1.73		
Monsoon	1.82			
Winter	1.43			
2	*Coriandrum Sativum*	Leaves	Summer	4.54
Monsoon	1.28			
Winter	2.55			
Bark	Summer	3.64		
Monsoon	0.71			
Winter	0.73			

Table 1

Seasonal variation of Glycine in leaves and bark of Murraya Koenigii and Coriandrum Sativum of Aurangabad in Maharashtra state

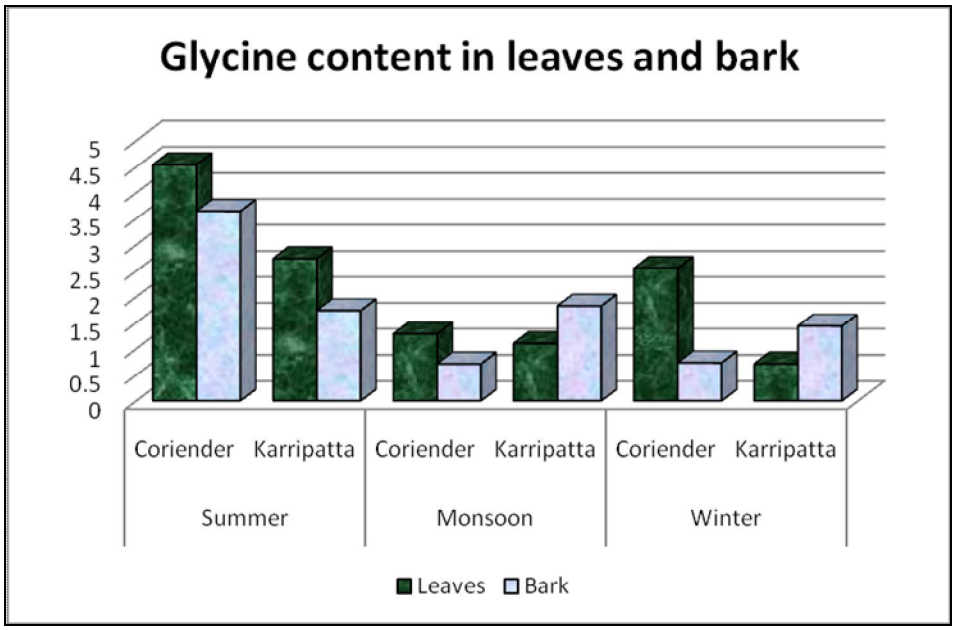

Figure 1