IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Impact of Growth Regulators on Shelf-Life Extension in Curry Leaf (Murraya koenigii Spreng.)

Geethalakshmi, I.,[1*] Punitha, A.,[2] Sumathi,T.,[3] Adeline Vinila,J.E.,[4] Vadivel,N [5]

[1]Assistant Professor (Horticulture), Horticultural College & Research Institute, Jeenur, Krishnagiri Dt,TN,India.
[2]Assistant Professor (Horticulture), Rice Research Station, Tirur, Tiruvallur Dt,
[3]Assistant Professor (Horticulture), Horticultural College & Research Institute,TNAU,Coimbatore.
[4]Teaching Assistant, Horticultural College & Research Institute,TNAU, Coimbatore.
[5]Associate Professor (Agronomy), Department of Agronomy,TNAU, Coimbatore.

***Corresponding author: Geethalakshmi, I.,**

ABSTRACT: Curry leaf is a tropical perennial leafy spice crop and suffers high post-harvest losses due to its rapid loosening of the moisture content and gets wilted in a day. Post-harvest soaking treatments of curry leaves with gibberellic acid and benzyl adenine concentrations (10, 20, 30, 40 and 50 ppm) were evaluated for the physical parameters and shelf life extension. Soaking of curry leaves in 10 ppm of gibberellic acid for 2 minutes registered a maximum extension of shelf life (6 days) with the least physiological loss in weight (24 %), followed by benzyl adenine with a least physiological loss in weight (25 %) and shelf life (5 days).

Keywords: Curry leaf, Growth regulators, Gibberellic acid, Benzyl adenine, shelf life.

INTRODUCTION

Murraya koenigii Spreng commonly referred as curry leaf, originated in India is categorized under aromatic tree spices. Curry leaf versatility is seen in its aroma and flavour. Major compounds responsible for its aroma and flavour are sabinene, caryophyllene, pinene, limonene which are known for pharmacological and nutraceutical properties. A 100 gm of fresh curry leaf contains 1g fat, 18.7 g carbohydrate, 6 g protein, 7560 µg beta-carotene, 0.93mg iron and 830 mg calcium. Minerals in curry leaf such as iron, copper, zinc are helpful in maintaining the normal blood glucose level in the body. It also possesses antimicrobial activity, antidiabetic activity, antioxidative property. Therefore curry leaf is considered to be a remarkable plant to mankind. Despite having curative properties, it has been subjected to significant post- harvest losses. The main causes for quality and quantity deterioration in curry leaf are temperature, pest attack, respiration, transpiration and improper handling. Owing to its poor shelf life, export value of this crop got declined. Thus a set of postharvest treatments were fixed with different combination of growth regulators *ie.* Gibberellic acid and Benzyl adenine at different concentrations. The aim of the experiment is to study the effect of growth regulators on the extension of shelf life.

MATERIALS AND METHODS

Leaves of the pink petioled cultivar maintained at the university orchard formed the basic experimental material. The leaves were harvested during the early morning hours, position of the petiole is allowed along with leaflet while stripping leaves showing abnormalities like yellowing, malformation, diseased and leaf pest are eliminated. Polythene bags of size 25 x 20 cm and of 100 gauge thickness were used for the experiment.

The required quantity of the growth regulators as per treatments were weighed accurately and dissolved in one liter of water to make the stock solution. The stock solution were taken and diluted as per the need to bring out the required concentration of each chemical. Twenty five grams of leaves was weighed for each treatment and were soaked in the respective growth regulators (GA and BA) at respective concentrations (10, 20, 30, 40 & 50 ppm) taken in a 500 ml bottle for a period of 2 minutes. The leaves were removed from each of the above containers, air dried, till they are free from moisture, filled in 100 gauge polythene bags uniformly and sealed and kept under ambient storage conditions in the laboratory for observations. The leaves packed in the polythene bags were analyzed initially and on the 3rd and 5th after packing for different parameters *viz.*, physiological loss in weight and shelf life.

RESULTS AND DISUSSION

Physiological loss in weight (PLW)\

Post harvest soaking treatments of curry leaf with gibberellic acid at 10 ppm concentration registered, the lowest physiological loss in weight (24%) followed by 30 ppm concentration (Table 1). The findings are in accordance with Bhanja and Lenka (1994) where the sapota fruits dipped in 100 ppm of GA_3 packed in polythene bags showed a lower physiological loss in weight and higher shelf life. Similarly Post harvest soaking of curry leaf in 10 ppm of benzyl adenine recorded a minimum physiological loss in weight (25-35%) (Fig 1). Dedolph *et al* (1962) also reported similar results with post harvest dipping of broccoli in benzyl adenine at a concentration of 10 ppm.

Maximum retention of shelf life (6 days) was obtained with dipping at 10 ppm of Giberellic acid and shelf life of 5 days with 10 ppm of Benzyl adenine (Table 2). Similar findings were reported by Salunkhe *et al* (1962) with N_6 benzyl adenine at 5, 10 and 20 ppm showed an increase in shelf life of cauliflower, endives, parsley, snap leaf, lettuce, radish, onion and cabbage. The present findings is also supported by Singh *et al* (1990) where in, post harvest dipping of betel leaves for 6 hrs in solution of 25 ppm benzyl adenine and 50 ppm keratin and packed in polythene bags prolonged the shelf life of leaves compared to the leaves packed in conventional baskets without treatments.

Fig 1.Effect of post harvest soaking in benzyl adenine on physiological loss in weight of curry leaf (*M.koenigii* Spreng) on 5th day after packing

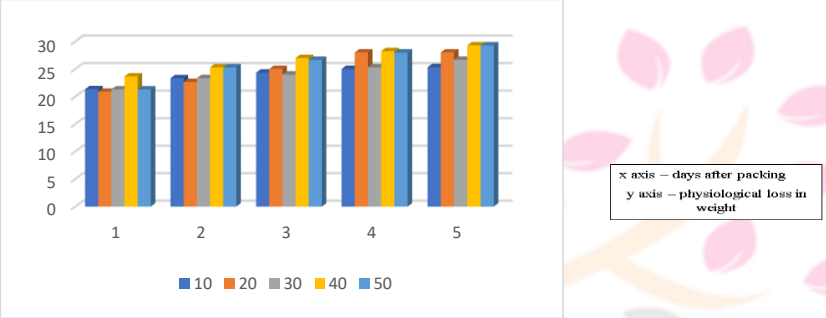

Table 1. Effect of post harvest soaking in gibberellic acid on physiological loss in weight of curry leaf (*M. koenigii* Spreng) on 5th day after packing

Treatment Gibberellic acid (ppm)	Physiological loss in weight (%)				
	Days after packing				
	1	2	3	4	5
10	18.64	19.00	20.00	23.12	24.00
20	19.32	20.21	23.44	24.66	27.83
30	19.32	21.33	23.41	24.22	25.00
40	18.65	19.00	19.32	21.32	25.31
50	18.32	19.24	20.20	23.33	25.24
Control	20.44	22.33	23.87	25.67	30.38
SEd	0.0041	0.0049	0.0045	0.0044	0.0046
CD(P=0.05)	0.0092	0.0108	0.100	0.0098	0.0103

Table 2. Effect of post harvest soaking in growth regulators on shelf life of curry leaf (*M. koenigii* Spreng) on 5th day after packing

Concentration (ppm)	Shelf life (Number of days)	
	Benzyl adenine	Gibberelic acid
10	5.66	6.00
20	4.66	5.33
30	5.00	5.00
40	4.66	5.67
50	4.33	5.33
Control	3.333	3.33
SEd	0.4635	0.5092
CD(0.05)	1.0327	1.1345

CONCLUSION

Post harvest soaking treatments with the growth regulators Gibberellic acid and benzyl adenine at 10 ppm concentration exhibited a maximum retention of shelf life and lower rate of physiological loss in weight compared to the other concentrations.

REFERENCES

[1] Bhanja, P.K., and P.C.Lenka 1994. Effect of pre and post harvest treatments on storage life of sapota fruits cv. Oval. Orissa J of horticulture. 22(1/2):54-57

[2] Dedolph,R.R.,S.H.Wittwer and V.Tuli and D.Gil bart. 1962. Effect of N_6 benzyl aminopurine on respiration and storage behaviour of broccoli (*Brassica oleraceae* var. "Italica"). Plant physiology, 37**:** 509-510

[3] Salunkhe, D.K., G.M. Cooper, A.S. Boe and A.L.Rivers. 1962. Effects of pre and post harvest treatments on storage of fruits. Food Technol., 16:119

[4] Singh, K.K., V.R.Balasubramanyam and V.K.Kohhar. 1990. Effect of different packing methods, temperature conditions, treatment with chemicals on the senescence and storage behaviour of betel leaves (*Piper betel* L.*)*.J. Plantation.Crops, 18(1**):**23-28