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CALLOGENIC RESPONSE OF YOUNG LEAF AND SHOOT TIP OF *KEDROSTIS FOETIDISSIMA* (JACQ.) COGN.

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ABSTRACT

Callogenic response of explant such as leaf and shoot tip and of *Kedrostis foetidissima* was tried on MS medium with varied concentrations of auxins (NAA and 2,4-D) and cytokinins (BA, IBA). The green callus was produced in all the combinations. Maximum fresh weight (571 ± 10.85 mg) was observed in the callus derived from leaf on MS+ 0.8 mg / l BA + 0.8 mg / l 2, 4-D). Earlier response (7 days) was observed in the leaf MS+ 0.8 mg IBA +0.8 NAA within 7 days. Callus derived from Shoot tip on MS+ 0.9 mg / l IBA + 0.9 mg/ l NAA and MS + 0.7 mg/l 2,4 D + 0.9 mg/l IBA combination obtained callus within12 days.

Keywords: Cucurbitaceae, Callogenesis. MS (Murashige and Skoog), BA (Benzyl adenine), IBA (Indole -3 butyric acid), NAA (Naphthalene acetic acid) 2,4- D (Dichlorophenoxy acetic acid).

1. INTRODUCTION

Kedrostis foetidissima belongs to the family Cucurbitaceae. The fruits are used as vegetables by local people. Many members of cucurbitaceae are exploited for their medicinal economic and culinary values. However *Kedrostis foetidissima* (Jacq) Cogn is less exploited. The plant is widely distributes in Africa and Asian countries. In Tamil nadu, it is distributed in cuddalore, salem, Dharmpurari and Coimbatore (dis) . *Kedrostis foetidissima* (Jacq.) Cogn commonly known as 'Appakovai' in Tamil, It is very effective in the treatment of asthma, chest pain, and urinary tract infection, diarrhea, small pox, skin diseases and snake bite. The present study aims to callogensis of *Kedrostis foetidissima* , Leaves and young stem raw or cooked, Although described as having an offensive odour when crushed, the leaves are a favoured raw food in some areas, where they are also used as a cooked vegetable (or) added to soups and sauces as a spicy incredient, Which has got wonderful medicinal values on cough, asthma and piles

2. MATERIALS AND METHODS

2.1 Explant material:

Explants of *Kedrostis foetidissima* were collected from the natural habitats of Tamilnadu during the rainy season. As the explants were very fragile and delicate they were surface sterilized using 75% alcohol for one minute and immersed in 0.1 % mercuric chloride for 4 minutes and rinsed through with sterile distilled water.

2.2 Medium and culture conditions

The basal medium used in the present investigation was full strength Murashige and Skoog, (1962) medium with various combinations of auxins (NAA and 2,4 D) and cytokinins (BA, IBA) as given in the Table 1. The pH was adjusted to 5.8 by adding 0.1 N Lactic acid or 0.1 N NaOH. Inoculated tubes were incubated at $25^0 \pm 1^0$ C under cool white fluorescent lamps of intensity 2000 lux for 12 hours photoperiod. Replicates were tried for each concentration and each combinations. The percentage frequency, morphology of callus, maximum fresh weight and the time duration for each explant were tabulated.

Kedrostis foetidissima

Table – 1: Showing the concentration of growth regulators on callus formation Leaf and shoot tip explants of *Kedrostis foetidissima*

S. No	Explant	Hormones	Concentration
1.	Young Leaf	BA + 2, 4 - D IBA + NAA	0.6 mg/ l - 0.9 mg / l 0.6 mg/ l -0.9 mg / l

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2.	Shoot tip	IBA + NAA 2,4 D + IBA	0.7 mg/ l - 0.9 mg / l 0.7 mg/ l - 0.9 mg / l

3. RESULTS AND DISCUSSION

Difference in the composition and culture medium can result in variation in callus induction. Various concentrations and combinations of auxins (NAA and 2, 4 -D) and cytokinins (BA, IBA) were applied in MS to induce callus in *Kedrostis foetidissima* and the results are given in Table 2

Of the two explants such as shoot tip and leaf, maximum percentage of green callus was produced from the leaf segments on MS + 0.8 mg/ l BA + 0.8 mg / l 2, 4 –D with a maximum fresh weight of 571 ± 10.85 mg within 14 days. Earlier response was observed (MS + 0.9 mg/ l IBA + 0.9 mg / l NAA) green compact callus within 7 days from the leaf of *Kedrostis foetidissima.* Whereas in *Momordica charantia* 1.0 mg/ l BAP + 1.0 mg / l 2,4 –D induced high frequency of callus (93.75%) (Munsur *et al*., 2009). In *Trichosanthes dioica* higher concentration of (0.1 - 2.0) 2,4 D + NAA produced callus from the leaf segments (Malek *et al*., 2010).

In the shoot tip of *Kedrostis foetidissima* a combination of MS + 0.9 mg/ l IBA + 0.9 mg / l NAA induced earlier production of callus within 7 days when compared to MS + 0.7 mg/ l 2,4 D + 0.9 mg / l IBA which produced only callus after 12 days. As far as shoot tips are concerned a combination of MS +0.7 mg/ l 2,4 D + 0.8 mg / l IBA induced maximum callus after 12 days. In *Cucurbita maxima* MS + 2.5 mg/l 2,4-D+0.2 mg/l BAP induced callus from the shoot tip whereas in *Beninicasa hispida* MS + 0.2 mg/l 2,4-D + 3.0 mg/l BAP induced callus form the shoot tip (Haque *et al*.,2008).

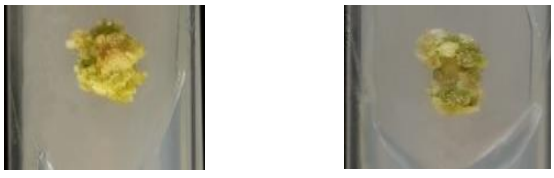
TABLE 2 Showing the effect of growth regulators on callus formation on various explants of *Kedrostis foetidissima* (Jacq.) Cogn.

S.No	Explant	MS + Hormones	Concentration (Mg/L)		% Frequency of Callus	Fresh Weight in mg	Time duration	Response
1	Young Leaf	BA+2,4-D	0.6 0.7 0.8 0.9	0.6 0.7 0.8 0.9	15±2.65^{a} 30±4.60^{b} **40±4.41^{c}** 38±7.29^{d}	501±12.29^{a} 552±19.27^{b} **571±10.85^{c}** 564±6.18^{dbc}	14 days	Green Callus
CD (P<0.05)					7.52	19.50		
2	Young Leaf	IBA+NAA	0.6 0.7 0.8 0.9	0.6 0.7 0.8 0.9	16±2.23^{a} 25±2.87^{b} **30±4.13^{c}** 28±5.35^{dbc}	480±6.66^{a} 501±11.98^{b} **525±7.07^{c}** 520±7.07^{dc}	7 days	Greenish compact Callus
CD (P<0.05)					4.75	12.7		
3	Shoot tip	IBA+NAA	0.7 0.8 0.9	0.7 0.8 0.9	10±2.56^{a} 12±3.20^{ba} **15±2.42^{cb}**	360±9.09^{a} 385±9.09^{b} **405±6.95^{c}**	7 days	Green compact Callus
CD (P<0.05)					4.23	11.9		
4	Shoot tip	2,4-D+IBA	0.7 0.7 0.7	0.7 0.8 0.9	5±2.32^{a} 7±1.85^{b} **10±2.15^{c}**	425±3.26^{a} 485±7.07^{b} **536±8.61^{c}**	12 days	Light green callus
CD (P<0.05)					2.76	10.3		

Kedrostis foetidissima

Callus - Leaf (a & b)

(a) (b)



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Callus - Shoot tip (c & d)

(c)

(d)

4. CONCLUSION

From the foregoing account it is clear that BA, IBA promoted cell division when added together at lower concentration with an auxin (*ie*, NAA and 2,4-D). All the parts of the *Kedrostis foetidissima* are capable of producing callus which can be further manipulated for both regeneration and secondary metabolite production and also prevent economically important of their medicinal value. Medicinal value of medicinal plants as potential sources of new compounds of therapeutic value and as sources of lead compounds in drug development. Now days medicinal plant are play an important role in the world. *Kedrostis foetidissima* is a least concerned plant and is a threatened species it requires severe attention for conservation.

5. REFERENCE

[1] Murashige T and Skoog F., 1962. A revised medium for rapid growth and bio assays with Tabacco tissue cultures. Physiol Plant 15 : 473 - 497.

[2] Kim S, Chang, Rahn, J, Cha, Cheol H and Lee, Wong K (1988). Callus growth and plant regeneration in diverse cultivars of Cucumber *(Cucumis sativus*,L). Plant cell. Tissue and organ culture 12 : 67- 74.

[3] Haque, M E, Sarkar, M A R, Mahmud, D, Exwana and Sikdar B (2008). In vitro propagation of *Benincasa hispida* and *Cucurbita maxima* through nodal segments. J. Bio. Sci 16 : 67 - 71.

[4] Munsur M A Z, Haque M S, Nasiruddin, K M and Hossain, M S., 2009. *In vitro* propagation of Bitter Gourd *Momordica charantia* 1.) from nodal and root segments. Plant Tissue culture and Biotech 19 (1) : 45 - 52

[5] Malek M A., Mannan D., Khanam., Molla M.H., and Khatun., 2010. *In vitro* regeneration through callus in pointed gourd (*Trichosanthes dioica* Roxb). Bangladesh.j.Agril.Res.35 (3): 465 - 473.