In vitro studies on Capparis decidus. A multipurpose plant of arid region.

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ABSTRACT:- Various experiments viz. types of media (MS basal, MS three- fourth, MS half, B_5 and WP) and growth regulators (auxin, cytokinin) with various concentration were designed in order to study the bud breaking or multiple shoot induction. Out of various media and growth regulators tested the maximum number of explants were responded on MS full strength medium supplemented with NAA 0.1 mg/l + BAP 5.0 mg/l +additives. Different type of cytokinin (2-IP, KN, BAP) with concentration from 0.25-2.5 mg/l) were tested but best result from subcultured shoot were found on MS medium supplemented with IAA 0.1 mg/l + BAP 2.5 mg/l+ additives (ascorbic acid 50 mg/l, citric acid 25 mg/l L-arginine 25 mg/l and adenine sulphate 25 mg/l).These culture were incubated at temperature ranging from 25C to 35C under different regime of light for shoot induction.

Key word- in vitro, medium, subculture, inoculation, explant

INTRODUTION

Capparis decidua (forsk) Edgew belongs to family capparidaceae (Locally known as ker) is a multipurpose shrub or small tree of arid horticulture, which provide hard heavy and termite resistant wood (Gupta et al 1989). The unripe fruits are consumed as pickles and dry fruits are sold at very high rate (1000/kg) in market. These are used in preparation of delicious vegetable curry.

Conventionally this plant is propagated through seeds. Since the plant is out breeder therefore it shows widespread genetical variability in flower colour, morphology, fruit production per plant, quality of wood ect. The stem and root bark extract contain isocodonocarpine and other alkaloids which are effective in curing asthama, inflammation, cough ect. (Ahmad et al 1989). The seed also contain 20% of edible oil (Shushila Rai 1987). Others alternatives methods of propagation viz. cutting, grafting, air layering etc are not available for this plant. Therefore the tissue culture technology provides alternative way to propagate this plant at large scale (Ahuja 1991,Hammatt 1992).

MATERIAL AND METHODS

Different sites of arid region i.e. Jalore, Barmer, Jaisalmer , Jodhpur and Pali were explored in order to select mother plant (for collection of explants).The explants were collected from different lopped and unlopped plant during all season. Various type of explants viz. nodal shoot segments, internodal segments, leaf and root were tested for shoot induction.

These explants were taken to laboratory and wash with tween 80 followed by running tap water. These explants were surface sterilized with 70-90% of ethanol for 60-90 sec followed by 0.1 % of , mercuric chloride for 4-7minutes. The steriliant treated explants were washed 4-6 times with sterile distilled water and inoculated either vertically or horizontally on culture medium.

These surface sterilized explants were inoculated on different types of media viz. B5 (Gamborg et al), WP,Ms-full strength, Ms half strength and MS three- fourth strength for shoot buds proliferation . Various experiments were conducted to know the effect of cytokinin (KN, 2- iP. BAP) with concentration of 0.25-2.5mg/l+ additives on shoot bud proliferation. After harvesting differentiated shoots from nodal region of explants, the mother explants were repeatedly transferred on fresh MS medium supplemented with0.1mg/l of IAA and different concentration of BAP (1.0-5.0 mg/l) along with additives to yield fresh crop of shoot.

RESULT AND DISCUSSION:-

The surface sterilized explants were inoculated on difference type of media with NAA 0.1 mg/l +BAP 5.0 mg/l + additives(Table 1). The highest number of explants i.e. 75-80% were responded on MS (Murashige and Skoog) full strength basal medium supplemented with 0.1 mg/l NAA + 5.0 mg/l BAP. On this medium maximum 8-10 shoot per node were produced, while lesser number of shoot i.e. less than 5 were produced on other media. B_5 medium was found to be less effective for shoot bud induction. The mother explants were reused 4 to 6 times to get fresh crop of shoot under in vitro.

In vitro grown shoots were taken for further subculture. These shoots were cultured on MS medium supplemented with different types of cytokinin (KN, 2 -iP, BAP) with various concentration (0.25-2.5 mg/l). The highest number of shoots were produced i.e. 6-8

shoot per node on MS medium containing 0.1 mg/l IAA + 2.5 mg/l BAP +additives (Table 2). The kinetin and 2-iP was found less effective for shoot bud proliferation.The various concentration of BAP(1.0-25mg/l) alongthwith 0.1 mg/l of IAA were tested for shoot induction. It was found that on higher concentration of BAP although maximum number of shoot induction were occurred but shoot remain dwarf. In many desert plants, the tissue culture methodology is available for mass multiplication.(Deora et al 1995, Shekhawat et al 1993,Rathore et al 1993).Each experiments were consisted of fifteen replicate and repeated three times. These culture were incubated at 28±2 C under 12h of photoperiod (4000-4500 lux intensity of light).

ABBREVIATION; BAP-6 benzyleaminopurine, NAA-nepthalene acetic acid,2-iP-iso- pentenyl adenine ,IAA-indole-3-acetic acid, SD-standard deviation,WP-woody plant medium,

Table 1.Effect of various media in multiple shoot induction from nodal portion of explant of C. deciduas after 3 weeks.

Media* Used	Explants responded ± SD	Shoot number/ explants ± SD	Shoot length (length)± SD
B_5	56.0±4.2	3.2±0.8	1.6±0.4
WP	62.0±5.7	3.4±0.8	1.7±0.6
½ MS	65.0±3.5	3.4±1.1	2.0±0.6
¾ MS	69.0±4.2	5.2±0.8	2.2±0.6
MS	76.0±5.2	7.2±1.3	2.76±0.3

Media supplemented with NAA 0.1 mg/l + BAP 5.0 mg/l + additives

Table 2. Effect of various cytokinins on shoot multiplication from subcultured shoots of C. decidua on MS medium containing MS+IAA 0.1 mg/l + additives.

Cytokinin (mg/l)	Shoot numbers per explant ± SD	Shoot length (cm) ± SD
Control	1.4±0.6	1.6±0.4
2- iP		
0.25	1.6±0.6	1.8± 0.3
0.5	2.4±0.6	1.9±0.4
1.0	3.6±0.6	2.6±0.4
2.5	4.4±0.8	1.7±0.3
KN		
0.25	1.6±0.6	2.8±0.8
0.5	2.6±0.6	2.1±0.4
1.0	3.6±0.6	1.9±0.4
2.5	5.0±0.7	0.9±0.4
BAP		
0.25	1.8±0.8	2.9±0.4
0.5	3.2±0.8	2.4±0.4
1.0	4.8±0.8	2.2±0.6
2.5	6.0±1.2	0.9±0.4

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