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Short Communication

Effect of media composition on *In vitro* multiplication of sugarcane varieties

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Healthy and contamination free *in vitro* sugarcane plantlets of varieties Co 86032 and CoN 91132 were used in order to study the effect of different levels of Kinetin, Benzine Adenine (BA) and Coconut water on shoot multiplication, length of main shoot and number of leaves on main shoot. The most widely accepted MS medium [1] was supplemented with three levels of kinetin i.e. 0.5, 1.0 and 1.5 mg/lit; four levels of BA i.e. 0.5, 1.0, 1.5 and 2.0 mg/l and two levels of coconut water i.e. 10 and 20 per cent, thus making 25 treatment combinations (24 + control) arranged in three sets (Table 1). The MS basal medium devoid of kinetin, BA and coconut water was used as control.

The cultures were incubated in a culture room at a temperature of 26 ± 2° C with relative humidity of 55 ± 5 percent and were exposed to approximately 2000 lux light intensity for sixteen hours per day. Comparative studies were made on various aspects of *in vitro* propagation of sugarcane varieties Co 86032 and CoN 91132.

Table 1. Effect of kinetin, benzine adenine (BA) and coconut water on *in vitro* multiplication rate, length of main shoot and number of leaves on main shoot in var. Co 86032 and CoN 91132

Sr. No.	Growth regulators			Var. Co 86032			Var. CoN 91132		
	Kinetin mg/l	B.A mg/l	Coconut water (%)	Multiple shoots obtained after 35 days	Length of main shoot (cm)	No. of leaves on main shoot	Multiple shoots obtained after 35 days	Length of main shoot (cm)	No. of leaves on main shoot
1.	0.5	0.5	10	1:1.13	5.43	2.19	1:1.13	4.63	1.95
2.	0.5	0.5	20	1:1.13	5.70	2.33	1:.13	4.70	2.19
3.	0.5	1.0	10	1:2.13	5.96	2.27	1:2.06	5.06	2.02
4.	0.5	1.0	20	1:3.23	6.20	2.41	1:2.30	5.23	2.27
5.	0.5	1.5	10	1:2.06	5.53	2.27	1:2.06	4.66	1.95
6.	0.5	1.5	20	1:3.13	5.03	2.33	1:2.03	4.13	2.41
7.	0.5	2.0	10	1:3.36	4.46	2.03	1:2.53	3.63	2.03
8.	0.5	2.0	20	1:3.80	4.23	2.11	1:3.26	3.50	1.95
9.	1.0	0.5	10	1:2.83	6.86	2.48	1:3.06	5.93	2.48
10.	1.0	0.5	20	1:4.30	6.90	2.11	1:3.06	5.96	2.19
11.	1.0	1.0	10	1:3.93	6.66	2.40	1:3.60	5.73	2.11
12.	1.0	1.0	20	1:4.16	7.36	2.67	1:3.76	6.33	2.61
13.	1.0	1.5	10	1:5.00	6.96	2.54	1:4.16	5.73	2.41
14.	1.0	1.5	20	1:6.00	6.86	2.41	1:4.46	5.93	2.27
15.	1.0	2.0	10	1:6.26	5.13	2.18	1:5.06	4.10	2.41
16.	1.0	2.0	20	1:7.16	4.73	2.19	1:5.43	3.86	2.11
17.	1.5	0.5	10	1:4.43	6.66	2.33	1:4.13	5.90	2.26
18.	1.5	0.5	20	1:5.06	6.63	2.61	1:4.46	6.10	2.33
19.	1.5	1.0	10	1:5.23	7.23	2.60	1:5.13	5.66	2.61
20.	1.5	1.0	20	1:6.13	6.96	2.61	1:5.36	5.96	2.33
21.	1.5	1.5	10	1:6.23	5.20	2.03	1:5.93	4.16	1.95
22.	1.5	1.5	20	1:7.03	5.23	2.27	1:6.10	4.16	2.27
23.	1.5	2.0	10	1:6.60	4.66	2.11	1:5.90	3.60	2.11
24.	1.5	2.0	20	1:5.83	4.10	2.19	1:6.26	3.40	1.95
25.	Control			1:0.76	4.53	2.33	1:0.83	4.40	2.03

Multiple shoots obtained after 35 days

Different levels of kinetin, benzine adenine and coconut water had marked effect on shoot multiplication which varied between two varieties (Table 1). Significantly the highest shoot multiplication ratio in both varieties were recorded in treatment combination of 1.5 mg/l kinetin + 1.5 mg/l BA + 20 per cent coconut water, however it was at par with treatment combination 1.0 mg/l kinetin + 2.0 mg/l BA + 20 percent coconut water and 1.5 mg/l kinetin + 2.0 mg/l BA + 20 per cent coconut water in varieties Co 86032 and CoN 91132, respectively. The lowest multiplication ratio was recorded in control and treatment combinations comprised of lower concentration of kinetin and benzine adenine. Thus, Kinetin, BA and Coconut water had major influence on *in vitro* shoot multiplication. This result is in accordance accordance with Hendre [2], Dantu and Bhojwani [3], Simpson and Bell [4] and Prasad and Chaturvedi [5] who obtained higher *in vitro* shoot multiplication with higher levels i.e. 2.0 to 5.0 mg/l B.A., in different crops.

Length of main shoot

Treatment combination 1.0 mg/l kinetin + 1.0 mg/l BA + 20 percent coconut water exhibited higher length of main shoot in both the varieties, i.e. 7.36 cm in Co 86032 and 6.33 cm in CoN 91132. It was also noticed that the higher levels of kinetin and BA were responsible for reduced length of *in vitro* sugarcane plantlets. *In vitro* plantlets treated with 2.0 mg/l BA and 20 percent coconut water with 0.5 and 1.5 mg/l kinetin exhibited significantly the lowest length of main shoot in both the varieites. Dantu and Bhojwani [3] and Prasad and Chaturvedi [5] also found that higher levels of BA reduce the shoot elongation of *in vitro* plantlets of gladiolus and *Amaryllis*, respectively. They also observed that shoots were elongated only when 6-BAP was deleted from the medium or its level was reduced upto 0.1 to 0.2 mg/l.

Number of leaves on main shoot

In vitro plantlets treated with 1.0 mg/l kinetin + 1.0 mg/l BA + 20 per cent coconut water exhibited the highest number of leaves on main shoot in var. Co 86032 (2.67) and CoN 91132 (2.61), (Table 1) whereas treatment combination of 0.5 mg/l kinetin + 2.0 mg/l BA + 10 per cent coconut water showed significantly the lowest number of leaves on main shoot. It is obvious that when the length of main shoot increases, the number of leaves on sugarcane plantlets also increase.

References

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