

## Short communication

# Ethidium bromide (EB) induced mutants in gingelly (*Sesamum indicum* L.) cultivar 'Vinayak'

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One eight-loculed mutant was isolated from *Sesamum indicum* L. cv. 'Vinayak' in the M<sub>2</sub> stage using 0.05% ethidium bromide. The breeding behaviour of this mutant was followed up to M<sub>6</sub> through selfing and reciprocal crosses with a control. The nutritional value of this mutant was assayed in terms of oil, protein, PUFA and  $\alpha$ -globulin content. Two variants from this mutant could be distinguished: one with a monostem (in M<sub>3</sub>) (Fig. 2) and another with a broad and flat stem (in M<sub>3</sub>) (Fig. 3). Supernumerary floral parts (Fig. 5) and vivipary (Fig. 4) were also recorded. Chemical induced mutants of a similar range have been reported by earlier workers in gingelly and other crops (Zia-Ulthasam 1987, in gingelly; Kamala and Nagamani 1980, in *Brassica*; Mallikarjuna Radhaya and Channabyregowda 1981, in safflower).

The mutant could be stabilised for 8 locules by the M<sub>6</sub> stage through selfing although some 6 loculed plants also occurred as segregants up to M<sub>4</sub>. Progenies from the six and eight loculed plants showed segregations of 1:5 and 1:11, respectively of the two types in M<sub>3</sub> and M<sub>4</sub> but the latter showed stabilised behaviour from M<sub>5</sub> onwards. Reciprocal crosses of six and eight loculed plants with the 4 loculed control showed a lack of any maternal influence. Capsules with up to 24 locules were also occasionally observed (Fig. 6, 6a) although unstable. These results suggest the influence of modifying factors on the number of locules as against the single recessive inheritance of the 8 loculed condition recorded earlier (Kumar and Rao 1945). Increase in the number of floral parts and locules, and broad and flat stems can also be accounted for by the Chemical induced fasciation or somatic mutations (White 1945). Suppression or inhibition of the lateral growing points result in monostems and removal or deactivation of inhibitors present in the seed or in

associated structures (Baburao and Bhalla 1979). Unfavourable action of rains or humidity (Reddy and Rao 1977) results in vivipary.

Seed yield per plant and the nutritional value of the seed and of the seed oil of the 8 loculed mutant showed a significant improvement in the present project. Yield, level of important fatty acids as oleic and linoleic (Table 1), and the  $\alpha$ -globulin fraction registered a

**Table 1.** Effect of ethidium bromide on fatty acid composition of multiloculed mutant

Variety/ generation	16:0	18:0	18:1	18:2	20:0	24:0
Control						
M <sub>3</sub>	9.7	5.5	40.7	42.5	0.60	0.81
M <sub>4</sub>	9.6	6.0	42.6	40.1	0.73	0.54
Mutant						
M <sub>3</sub>	8.8	4.0	35.4	50.5	0.4	0.69
M <sub>4</sub>	9.5	5.7	41.3	41.8	1.0	0.45

16:0=Palmitic; 18:0=Stearic; 18:1=Oleic; 18:2=Linoleic; 20:0=Lignoceric; 24:0=Arachidic

**Table 2.** Effect of ethidium bromide on yield percent oil and protein content in 8 loculed mutant *Sesamum indicum* variety 'Vinayak'

Variety/ treatment	Gene- ration	% oil	% protein	Yield in g/pt
Control	M <sub>2</sub>	44.0	24.3	12.8±0.2
	M <sub>3</sub>	43.0	24.1	14.8±0.6
	M <sub>4</sub>	43.5	23.8	11.3±0.8
Multiloculed mutant	M <sub>3</sub>	41.0	21.3	20.6±0.3
	M <sub>4</sub>	43.3	23.3	24.5±0.5



**Figs. 1–7.** Induced mutants in 'Vinayak'. 1 control; 2 monostemmed mutant; 3 flat and broad stemmed mutant; 4 capsule showing vivipary; 5 supernumerary petals and stamens; 6, 6 a multiloculed mutant with capsules showing different number of locules; 7  $\alpha$ -globulin in control and multiloculed mutant

substantial increase, although the percent content of oil and protein remained unchanged from the control (Table 2).

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