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SMC BREWER'S YEAST AS PROTEIN SOURCE FOR MASS REARING OF ORIENTAL FRUITFLY, DACUS DORSALIS HENDEL[1]

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Substitution of yeast hydrolysate with SMC brewer's yeast shortened the preoviposition and larval periods of the Oriental fruitfly, Dacus dorsalis **Hendel, although it did not affect the sex ratio and fecundity. The effect of SMC brewer's yeast on pupation rate varied substantially among the five diet combinations used. Of these diets, diet X appears to be the best medium for mass rearing of this fruitfly species.**

The amount of SMC brewer's yeast seems critical only up to a certain level beyond which no further improvement was obtained.

Based on the results of previous work on diet combinations for the mass rearing of the Oriental fruitfly, *Dacus dorsalis* Hendel, in the laboratory (Rejesus *et al.* (1973) 1975), five of these 12 diets performed well and were further tested here (Table 1), using local SMC brewer's yeast (45% protein) instead of the imported yeast hydrolysate. Also, the amount of sodium benzoate was increased from 1.0 to 1.5 gms per liter.

Table 2 shows that of the five diet combinations, only diet VII was unsatisfactory on the basis of larval-pupal weight, recovery emergence and oviposition period. Of the four better diets, diets VIII, IX and X encouraged a shorter preoviposition period than diet XI, 6.2 to 7.7 days against 8.5 days. This is a marked improvement from the previous diet combinations where the preoviposition period ranged from 13.43 to 19.46 days. However, the sex ratio and fecundity obtained from using either yeast hyrolysate or SMC Brewer's yeast as protein source were relatively the same (Rejesus *et al.* (1973) 1975).

The substitution of yeast hydrolysate with SMC brewer's yeast also shortened the larval period from 8-10 days to 6.5-7 days (Table 3). However, the rate of pupation varied substantially among the diet combinations. It appears that diet X is outstanding, giving 60.88% pupation on the fifth day. Other diet combinations achieved this percentage only after 7-8 days or even longer. Ge-

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nerally the emergence of adults followed the same pattern observed in pupation (Table 4).

Diet X appears to be the best medium and is now recommended for use in the mass rearing of at least the Oriental fruitfly. In addition, the amount of SMC brewer's yeast (Table 1) seems critical only up to a certain level (33.1 gm/li) beyond which no proportionate improvement was obtained (Gast 1968, Friend 1968). Further improvement of mass-rearing media is undoubtedly a continuing concern and so far, diet X appears to be the cheapest available.

TABLE 1. **Diet composition (grams/li)**

Ingredient	Proportion of ingredients (grams/li)				
	VII	VIII	IX	X	XI
Rice Bran	100	100	100	100	100
Cooked yellow sweet potato	50	50	50	50	50
SMC Brewer's Yeast	13.25	19.8	26.5	33.1	50.0
Sugar	10	10	10	10	10
Sodium Benzoate	1.5				
HCl	Adjust pH to 4.5				
Water	Enough to obtain desired consistency				

TABLE 2. **Efficiency of Rice Bran, Yellow Sweet Potato and SMC Brewer's Yeast Diet for the Oriental Fruit Fly.**

Diet	Percent Hatch (%)	Weight (mg)		Percent Recovery		Percent Emergence	Period (day)		Sex Ratio	per female Eggs
		Larva	Pupa	Larva	Pupa		Preoviposition	Oviposition		
VII	65.8	16.4	16.6	60.1	91.5	98.1	8.6	40.2	1:06:1	171.26
VIII	75.1	18.8	17.8	82.6	97.4	97.2	6.7	41.6	1:1:03	193.54
IX	69.0	20.9	18.1	86.6	95.6	91.6	6.2	39.7	1:8:1	160.88
X	70.3	21.2	18.2	64.3	96.6	87.6	7.7	46.0	1:1:1	217.84
XI	57.3	20.5	17.3	84.3	93.8	86.7	8.5	43.0	1:5:1	206.18

TABLE 3. **Pupation rate of larvae reared on SMC Brewe's Yeast fortified diet (percent).**

Diet	Days After Hatching					Days	
	5	6	7	8	9	Range	Mean
VII	1.48	12.68 (14.16)	77.38 (91.54)	8.46 (100)		5-8	6.5
VIII	2.09	28.03 (30.12)	68.62 (98.74)	1.26 (100)		5-8	6.5
IX	21.84	30.83 (52.67)	38.11 (90.78)	0.97 (91.75)	8.25 (100)	5-9	7.0
X	60.88	25.34 (86.22)	12.95 (99.17)	0.28 (99.45)	0.55 (100)	5-9	7.0
XI	47.89	3.09 (50.98)	42.29 (93.27)	3.09 (96.36)	3.64 (100)	5-9	7.0

(0.00) Cumulative pupation.

TABLE 4. **Emergence rate of larvae reared on SMC Brewer's Yeast-fortified diet (Percent).**

No. Diet	Days After Pupation					Pupal Period (Days)	
	8	9	10	11	12	Range	Mean
VII			16.8	79.0 (95.8)	4.2 (100)	10-12	11
VIII	2.99	30.35 (33.34)	2.49 (35.83)	64.17 (100)		8-11	9.5
IX	20.48	32.05 (52.53)	38.83 (91.36)	8.64 (100)		8-11	9.3
X	61.45	25.22 (86.67)	13.33 (100)			8-10	9.0
XI	54.55	2.92 (57.47)	33.12 (90.59)	9.41 (100)		8-11	9.5

(0.00) Cumulative emergence.

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