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of benzyl benzoate on components of fit-  
ness in *Drosophila*.

In long-term continuous populations of  
*Drosophila* maintained in population cages  
or bottles, infestation by mites is not  
uncommon, and benzyl benzoate is generally  
employed as an acaricide. A further com-  
ponent is thus added to the environment of

the population which may differentially affect the genotypes or species being studied. Thus, in single-species populations of *D. melanogaster* (Oregon-R-C) and *D. simulans* (vermilion) maintained in population bottles, significant differences were found between populations with benzyl benzoate ( $B^+$ ) and those without ( $B^-$ ) (Barker, 1967). For *D. simulans*, mean population numbers were higher for  $B^+$ , while for both species, population survival was higher for  $B^+$ . These effects were apparently not mediated just through mite control, and have been studied further by measurement of some components of fitness.

Species	% Benzyl benzoate	Viability (%)	Developmental time (days)		Body weight (mg)		Sex ratio (Males/Total)
			♂	♀	♂	♀	
<i>D. melanogaster</i> (Or-R-C)	0	79.25	9.63	9.59	0.855	1.114	0.501
	4	79.64	9.87	9.89	0.858	1.100	0.468
	10	79.86	10.06	10.03	0.834	1.071	0.456
<i>D. simulans</i> (vermilion)	0	63.10	9.66	9.49	0.762	0.953	0.491
	4	69.69	9.86	9.71	0.734	0.911	0.474
	10	66.00	10.00	9.77	0.725	0.900	0.511

Source of variation	d.f.	Mean square					
		Viability	♂ D.T.x10 <sup>4</sup>	♀ D.T.x10 <sup>4</sup>	♂ Wt.x10 <sup>4</sup>	♀ Wt.x10 <sup>4</sup>	Sex ratio x 10 <sup>4</sup>
Species	1	1449.02***	11.13	2550.70*	932.25***	2400.47***	19.96
B.B. %	2	22.50	4575.86***	4435.39***	22.59*	66.12**	20.89
Error	30	48.45	255.80	380.80	4.68	9.64	26.12

\*  $P < 0.05$ ; \*\*  $P < 0.01$ ; \*\*\*  $P < 0.001$ .

Sheets of paper towelling (about 2 x 2 inches) were soaked in alcohol (0% benzyl benzoate), a 4% solution of benzyl benzoate in alcohol, or a 10% solution, allowed to dry and placed in vials containing 5 ml of dead yeast fortified medium (medium F of Claringbold and Barker, 1961). Larvae (0-1 hr. old) of Oregon-R-C and vermilion were collected by the technique of Podger and Barker (1966) and 400 put into each vial, using a predetermined random order of initiation over the treatment combinations. Seven vials were set up for each treatment with Oregon-R-C, but only 5 for vermilion (0%), and 4 each for vermilion (4% and 10%), because of a shortage of vermilion larvae. Emerging adults were counted and weighed (males and females separately) twice daily. The averages for each treatment combination, and analyses of variance are shown in the table. The interaction was not significant in any analysis, and has been pooled into the error. Increasing concentration of benzyl benzoate has significantly increased developmental time and decreased body weight for both species.

The larvae in this experiment were not exposed to severe crowding (evidenced by the viability and average body weight), and the effects of benzyl benzoate may be more marked at higher levels of crowding. Nevertheless, the differences in populations of these two strains between those with benzyl benzoate and those without (Barker, 1967), could be explained in terms of the extended developmental time, although other components of fitness (e.g. fecundity) may also be affected. (Work supported by Australian Research Grants Committee.)

References: Barker, J. S. F., 1967, *Evolution*, 21:606-619; Claringbold, P. J. and J. S. F. Barker, 1961, *J. Theoret. Biol.*, 1:190-203; Podger, R. N. and J. S. F. Barker, 1966, *D.I.S.*, 41:195.