by means of experiment-II, carred out some weeks later with the same populations. In addition to the four tests previously described, two new tests were made: Test-M(M), with 8 mated + 8 virgin females of D.melanogaster; Test-S(S), with 8 mated + 8 virgin females of D.simulans; and therefore, with a 16-adult density per vial.

The methodology was the same as for experiment-I, and the results appear on Table 2. The mean values were compared by means of the SNK-method (Sokal & Rohlf 1969). Two means not joined by a horizontal line are different with a 95% probablity or greater.

Surprisingly enough, we can clearly observe an inhibition in the fecundity of D.melanogaster when virgin females of D.simulans are present. The productivity of test M(S) was 85% of the productivity of test M(M). The result cannot be imputed to a different adult density. Even more amazing was the response of D.simulans: the inhibition of fecundity in presence of virgin females of D.melanogaster S(M), was so large that the productivity obtained in 48 hrs only represents 56% of that obtained in absence of its sibling species, S(S). This is the first time an inhibitory behaviour during the oviposition process is described in the pair melanogaster-simulans. Some reports working with these species have demonstrated how the presence of eggs (Moore 1952; Eoff 1973) or larvae (Moth & Barker 1976) of one of these species can inhibit the normal laying of the other species. In my experiments, the virgin females do not lay eggs (ovules) and this is evident when comparing the egg-pupa viability of the different tests: when virgins are present in a test, the egg-pupa viability was the same or greater than when they are absent. Therefore, the simple presence of virgins was the factor causing an inhibitory response in oviposition. This could be related to species-specific visual or olfactory clues. Mainardi (1968) and Krause et al. (1980) have found a stimulating effect upon fecundity in D.melanogaster originated by the previous presence of males on the food which could be ascribed to a male pheromone. The different response of D.melanogaster found between experiments I and II carried out at different times, does not have a simple explanation, although it is closely related with several competitive results (inhibition-facilitation; mutual inhibition; mutual facilitation; no-interference) found in my doctoral thesis to study competition at different times.

In the present paper, the inhibitory effect of foreign females was smaller on the second day, and this suggests some type of female habituation.

A female behaviour causing such drastic decrease in the fitness of a species must have some biological meaning. The possibility exists that the female inhibition could be the result of a selective pressure acting to avoid the mixed development of both species. If the preadults of these sibling species are grown in the same food, the frequency of interspecific hybridization could be high since, first, the newly emerged adults have not developed to a full extent their sexual discriminative sense (Barker 1962; Manning 1967) and second, because the heterospecific pairing is more frequent when larvae of both species are developed in the same vial (Eoff 1973). If this supposition, under study at present time, were correct, then the above mentioned inhibitory behaviour could have an adaptative value.

References: Barker, J.S.F. 1962, Am.Nat. 86:105-115; Eoff, M. 1973, Am.Nat. 107:247-255; Krause, J. 1980, DIS 55:78-79; Mainardi, M. 1968, Boll.Zool. 35:135-136; Manning, A. 1967, Anim.Behav. 15:60-65; Moore, J.A. 1952, Evol. 6:407-420; Moth, J.J. & J.S.F.Barker 1976, Oecologia 23:151-164; Sokal, R.R. & F.J.Rohlf 1969, in Biometry, Freeman & Co., San Francisco.

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The effect of the temperature upon the variability of the gene pool in a Brasilian population of D.melanogaster.

It has been demonstrated in the following note that the genetic composition of the Porto-Alegre 1982 population has varied between September and November, probably in relation with climatic conditions. Temperature is one of the two major environmental parameters (the other is relative humidity) which have a biological significance for Drosophila (Alahiotis & Pelecanos 1980; Ayala 1968). Therefore, the effect of the temperature in this change has been examined.

The samples of September and November were kept at 18°C during eight months. Thus we are allowed to consider that September population was maintained in experimental conditions of temperature near to those of nature (21°C), while November population was maintained in experimental conditions of temperature very different of those in nature (27°C). Tables 1 and 2 give for each locus, the sample size (N), the genotypic frequencies and the X^2 values

obtained after comparison of experimental and freshly captured populations.

Table 1. Genotypic frequencies in the Porto-Alegre population freshly captured in September 1982 and in the sample maintained during eight months at 18°C.
* P < 0.05; ** P < 0.01

LOCI:	ACPH				ADH					EST-C				
Samples	N	FF	FS	X^2_1	N	FF	FS	SS	X^2_A	N	FF	FS	SS + rares	X^2_B
Sept. 82	100	0.96	0.04	5.21*	100	0.45	0.37	0.18	14.96**	100	0.90	0.08	0.02	4.27
Sept. 82 maintained at 18°C	100	0.87	0.13		100	0.60	0.38	0.02		100	0.85	0.15	-	

LOCI:	EST-6						α-GPDH					PGM				
Samples	N	FF	FS	SS	rares	X^2_3	N	FF	FS	SS	X^2_2	N	FF	FS	rares	X^2_2
Sept. 82	89	0.19	0.36	0.37	0.08	5.19	100	0.68	0.27	0.05	0.17	100	0.74	0.12	0.14	6.14*
Sept. 82 maintained at 18°C	100	0.11	0.42	0.44	0.03		99	0.66	0.28	0.06		100	0.87	0.04	0.09	

Table 2. Genotypic frequencies in the Porto-Alegre population freshly captured in November 1982 and in the sample maintained during eight months at 18°C.
* P < 0.05; ** P < 0.01.

LOCI:	ACPH				ADH					EST-C			
Samples	N	FF	FF+SS	X^2_1	N	FF	FS	SS	X^2_2	N	FF	FF+SS	X^2_1
Nov. 82	145	0.75	0.25	9.89**	143	0.41	0.35	0.24	12.26**	123	0.93	0.07	16.22**
Nov. 82 maintained at 18°C	100	0.91	0.09		100	0.46	0.47	0.07		100	0.74	0.26	

LOCI:	EST-6					α-GPDH					PGM					
Samples	N	FF	FS	SS	X^2_2	N	FF	FS	SS	X^2_2	N	FF	FS	rares (1)	rares (2)	X^2_3
Nov. 82	144	0.10	0.30	0.60	2.89	143	0.83	0.13	0.04	5.44	145	0.79	0.03	0.08	0.10	36.79**
Nov. 82 maintained at 18°C	100	0.04	0.31	0.65		100	0.72	0.25	0.03		100	0.63	0.30	0.04	0.03	

In the case of the population captured in September, the genotypic frequencies have varied highly significantly only for the Adh locus (X^2_2=14.96); the variations were more slight for Acph (X^2_1=5.21) and Pgm (X^2_2=6.14) loci. In November population, four tests were highly significant: X^2_1=9.89, X^2_2=12.26, X^2_1=16.22, X^2_3= 36.79, respectively, for Acph, Adh, Est-C, and Pgm loci.

Our data have shown that temperature has induced gene pool differentiation. Thus we can consider that seasonal fluctuations and especially temperature are responsible for the changes in the genetic composition of the Porto-Alegre population.

References: Alahiotis, S. and M.Pelecanos 1980, Genetika 12:209-217; Ayala, F.J. 1968, Science 162:1453-1459.