

rabbits to γ -globulin, despite its greater molecular weight, was weaker than to serum albumin [11]. The possibility cannot be ruled out that γ -globulin, even of heterologous origin, normalizes the immunologic reactivity of an animal fed with cholesterol on account of the complement-fixing function of the Fc-fragment.

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CHANGES IN PLASMA CORTICOSTERONE LEVELS OF INBRED MICE AFTER STRESS

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Many experiments on inbred animals have shown that their behavior under stress is genetically controlled [3, 4]. Other investigations have shown that the hormonal response of the pituitary-adrenal system is genetically determined [7, 8].

The object of this investigation was to study differences in the plasma corticosterone level in mice of different strains reacting differently to an emotional-stress situation simulated in the "open field" (OF) test.

EXPERIMENTAL METHOD

C57BL/6 (6), CBA, and BALB/c (C) mice weighing 20-22 g were used. The conditions under which the animals were kept and the modification of the OF method used were described previously [3]. Corticosterone in blood plasma obtained after decapitation was determined by the method in [6] in the writers' own modification in two series of experiments 10 and 20 min after the end of the experiment in OF (+OF+10, +OF+20). In three control experiments, the hormone level was measured in intact mice (IM) and again after the same manipulations as with the experimental animals, except they were not placed in OF (-OF+10, -OF+20). The results were subjected to statistical analysis by Student's t test.

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TABLE 1. Plasma Corticosterone Concentration (in $\mu\text{g } \%$) in Mice of Different Genetic Lines

Experimental conditions	Line of mice					
	C		CBA		B6	
IM	$1,37 \pm 0,18$ (n=8)		$1,3 \pm 0,14$ (n=10)		$3,5 \pm 0,23$ (n=10)	
-OF+10	$5,37 \pm 0,94$ (n=8)	$P_1 < 0,001$	$1,55 \pm 0,14$ (n=10)	$P_1 > 0,05$	$4,8 \pm 0,69$ (n=10)	$P_1 > 0,05$
+OF+10	$4,37 \pm 0,43$ (n=8)	$P_1 < 0,001$ $P_2 > 0,05$	$4,4 \pm 0,69$ (n=10)	$P_1 < 0,001$ $P_2 < 0,001$	$7,9 \pm 0,4$ (n=10)	$P_1 < 0,001$ $P_2 < 0,01$
-OF+20	$7,0 \pm 0,64$ (n=8)	$P_1 < 0,001$	$6,42 \pm 1,2$ (n=7)	$P_1 < 0,001$	$7,1 \pm 0,4$ (n=10)	$P_1 < 0,001$
+OF+20	$8,12 \pm 0,37$ (n=8)	$P_1 < 0,001$ $P_2 > 0,05$	$5,1 \pm 0,75$ (n=10)	$P_1 < 0,001$ $P_2 > 0,05$	$6,4 \pm 0,49$ (n=10)	$P_1 < 0,001$ $P_2 > 0,05$

Legend. Number of animals given in parentheses. P_1) Significance compared with IM, P_2) significance compared with corresponding control.

As a result of placing the animals in OF, the plasma corticosterone concentration in CBA and B6 mice rose to 283 and 164%, respectively, of the control values obtained in the -OF+10 group, and 338 and 225% compared with IM. The hormone level in C mice at this time did not differ statistically significantly from that recorded in the control series -OF+10, although relative to IM it amounted to 318%. The corticosterone concentration in the -OF+20 and +OF+20 groups of all lines did not differ significantly.

In C mice, an intensive hormonal response thus evidently developed more rapidly and in response to weaker stimulation than in CBA and B6 mice, whereas the B6 line was characterized by the smallest increase in the corticosterone level under these experimental conditions. In light of the general notion that an increase in the plasma corticosteroid level reflects the response to stress, the relationships discovered are in agreement with conclusions drawn by many workers that C mice are most reactive, whereas B6 mice are resistant to the stress situation arising during OF experiments [1, 4].

Corticosterone levels found in intact B6 and C mice do not agree with certain data published previously [2, 5], probably on account of differences in the methods used to determine the hormone and also, possibly, differences in the way of keeping the animals and preparing them for the experiments. Meanwhile, the results confirm the basic conclusion drawn from those investigations, namely, that the plasma corticosteroid level is genetically determined both at rest and under stress.

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