Effect of Pantothenic Acid on the Longevity of Mice

Richard B. Pelton and Roger J. Williams

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RICHARD B. PELTON AND ROGER J. WILLIAMS

Clayton Foundation Biochemical Institute and Dept. of Chemistry, University of Texas, Austin

The disparity between the life span of worker and queen bees suggested the possibility that pantothenic acid which is the most conspicuous nutritional constituent of royal jelly(1,2) might have the effect of prolonging life in other species. An additional suggestion came from the finding of Gardner(3) that this vitamin acts as an anti-ageing factor in drosophila.

Method. Thirty-four male and 40 female, C-57 black mice, age 4-5 weeks, were procured from the Jackson Memorial Laboratory. The mice were grouped with either 6 or 7 animals of the same sex in each cage. Thirteen male and 20 female mice were given supplementary pantothenic acid and 21 male and 20 female mice were used for the control group. All mice were fed Purina laboratory pellets throughout the experiment. It was desired to give each of the 33 mice in the experimental group a supplement of approximately 300 μg of calcium pantothenate per day throughout the experiment. The vitamin was added to the drinking water and the amount added was based on the previous week's water consumption, *i.e.,* if average daily water consumption for the group in one cage was 4 ml per mouse, calcium pantothenate was added in the amount of 75 μg/ml. If the consumption was 5 ml then 60 μg of the vitamin were added per ml of water. The age of each mouse was

TABLE I. Summary and Statistical Data for Mice Which Received Pantothenic Acid Supplement and Controls.

	Mean life span in days							
	Mice with pantothenic acid supplement			Controls			t test(4)	U test(5)
	No.	Days	S.D.	No.	Days	S.D.	P =	P =
Both sexes	33	653.1	201	41	549.8	233	.05	.01
Male mice	13	660.4	220	21	559.0	167	.15	.04
Female mice	20	648.4	187	20	540.2	285	.18	.05

TABLE II. Analysis by Sex of Mice Given Pantothenic Acid Supplement and Control Mice.

	Mean life span in days				Days difference ♂ & ♀	% difference ♂ & ♀
	No.	♂	No.	♀		
Mice with pantothenic acid supplement	13	660.4	20	648.4	12.0	2
Controls	21	559.0	20	540.2	18.8	3
Days difference treated & controls		101.4		108.2		
% difference treated & controls		18%		20%		

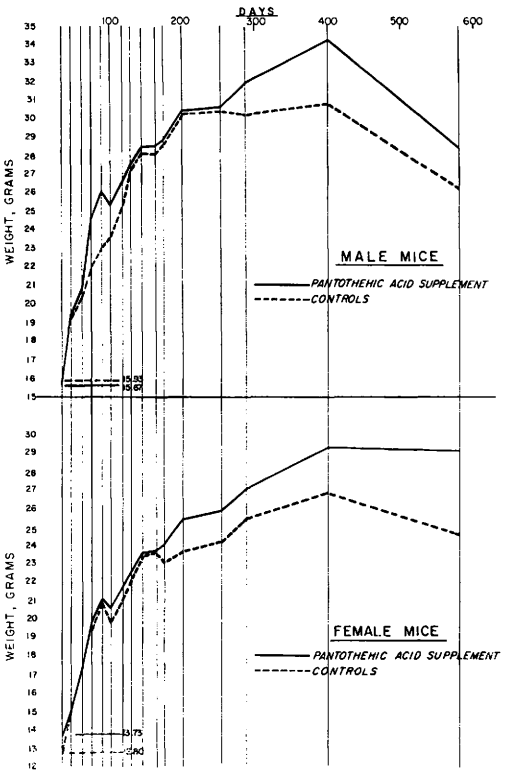

FIG. 1.

taken arbitrarily as 35 days at start of experiment.

Results. The data obtained are given in Tables I and II.

The above analysis (Table II) shows that differences in life span, 2% and 3% between treated males and females and control males and females, respectively, are negligible. There was however, a difference of 18% in life span betwen treated and untreated males and a difference of 20% between treated and untreated females.

The mice were weighed at 2-week intervals for the first 6 months and at greater intervals for the following year (Fig. 1, vertical lines). Both male and female mice which received pantothenic acid supplement gained and maintained slightly greater weight after about 250 days than did control mice. It is speculative as to whether this greater weight should be interpreted as indicative of better general health or as a sign of prolonged pre-senile period. The results of this experiment seem sufficiently significant to suggest further work with other species.

Summary. 1) Thirty-three young male and female C-57 black mice were given approximately 300 μg of calcium pantothenate daily in drinking water. Forty-one control mice did not receive the vitamin supplement. 2) The mean life span for the mice given supplementary calcium pantothenate was 653.1 days and that for the control mice was 549.8 days. The statistical difference between the 2 groups is P = 0.05 (T test) 0.01 (U test). 3) The mice which received the vitamin supplement maintained slightly greater body weight after they were approximately 250 days old.

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