Relationship between rearing period and motility by mice dosed with various teas

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Introduction

Many commercial teas[1], such as refined green tea, green tea, oulong tea, coarse tea, unpolished rice tea, black tea, etc. are on the market today. It utility as medicinal use is known to regulate one's stools, promote urination, cure for drowsiness, etc. The composition in teas are known to exist caffein[2], tannin[3], protein, amino acid[4], and an sugar, dextrin, starch, cellulose, pectin as carbohydrate, an chlorphyl, carotenoid, flavonol derivate as plant pigment, an refined oil, resin, organic acid, enzyme, vitamin, inorganic substants as other composition. The singularity with respect to composition in teas are considered that caffein, tannin, manganese and fluorine as inorganic substants are present much more compared with composition of general plants.

This report concerns with relationship between rearing period and motility by mice dosed with various teas, such as refined green tea, green tea, oulong tea, etc.

Experimental

Materials

Refined green tea, green tea, oulong tea, coarse tea, unpolished rice tea, black tea were purchased from market. These teas weighed out 2 g and extracted at 95°C for 5 min with boiling water (200 cc). D, D-mouse was purchased from Hayashi Chemical Co.

Prosedure

Measurement of motility by mice dosed with various teas were carried out both methods of swimming and hang-down. Swimming method was used to thermostat

made of polyethylene with an agitator for make a fixed condition of swimming. The temperature in thermostat was kept constant at 35°C. The endurance limit of mouse by swimming was measured the time to all-out, i.e. neck reflex cause and statement just before death from drowning. Hang-down method was measured the time that mouse hang on a dangler employing hands and legs. The height of bar was 50 cm. Moreover, the fall point of mouse applyed to 6 volt preventing that mouse fall off on the statement having the strength.

Results and Disussion

Variation on weight of mice

Relationship between rearing period and weight of mouse dosed with various teas were investigated. The result is shown in Table 1. The food of 5 g/day was fed to a mouse everyday. The weight of mouse dosed with various teas increased continuously, and revealed an increase of about 6 g on before and after rearing period as well as mouse dosed with water. Therefore, the composition in various teas had no effect on the weight of mouse.

Table 1 Relationship between the weight of mouse and rearing period by mice dosed with various teas (Control)

Tea	Rearing period (day)								
	0	3	6	9	12	15	18	21	24
A	28.82	30.08	30.27	32.32	32.75	32.00	33.20	33.65	35.17
B	28.00	29.76	30.40	30.31	31.55	31.40	31.50	32.15	33.93
C	32.17	33.95	34.85	34.61	35.85	34.50	35.30	37.00	38.85
D	29.85	32.87	33.62	33.01	35.70	36.00	36.80	37.55	38.50
E	30.98	31.36	31.95	31.42	32.15	32.45	33.00	33.90	36.73
F	29.35	31.75	32.48	32.56	32.30	32.20	33.60	35.85	35.48
G	27.83	30.36	32.01	32.43	33.20	32.70	32.70	32.80	35.31

A: Refined green tea, B: Green tea, C: Oulong tea, D: Coarse tea,
E: Unpolished rice tea, F: Black tea, G: Water
Above values expressed in g.

Relationship between rearing period and swimming or hang-down time by mice dosed with various teas

In order to endurance measurement of mouse dosed with various teas, we were investigated the relationship between swimming time and rearing period. The result is shown in Fig. 1. The swimming time by mouse dosed with various teas in comparison with mouse dosed with water as control tended to increase with increased

rearing period. The swimming time by mouse dosed with refined green tea was 3.5 times higher than thats by mouse dosed with water. Mouse on green tea and oulong tea against control were 3 and 2.5 times higher, respectively.

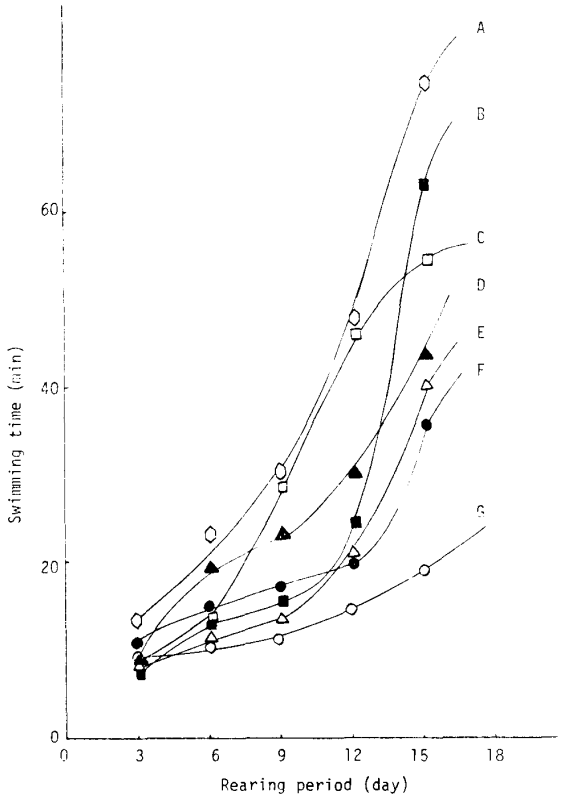

Fig. 1 Relationship between rearing period and swimming time by mice dosed with various teas
A : Refined green tea, B : Green tea, C : Oulong tea, D : Coarse tea, E : Unpolished rice tea, F : Black tea, G : Water (Control)

On the other hand, the relationship between hang-down time and rearing period was measured by the similar method of endurance measurement as described above. The result is shown in Fig. 2. The hang-down time by mouse dosed with various teas revealed an increased tendency against control mouse, especially 5 times higher on refined green tea and 4 times higher on green tea against control. Since the possibility exists that the composition in teas may also play a role in the motility of mice, it is necessary to take the composition in various teas into account. Moreover, in order to confirm the effect of composition in teas, the contents of amino acid, ascorbic acid, caffein and tannin in teas were investigated. The result is shown in Table 2. The contents of amino acid in teas increased in the order refined green tea, green tea, coarse tea and unpolished rice tea. Acetylation or esterification of amino acid can be conducted readily, and exist as action keep to nitrogen-equilibrium, reacting with nitric acid on the science of nutrition. The contents of ascorbic acid

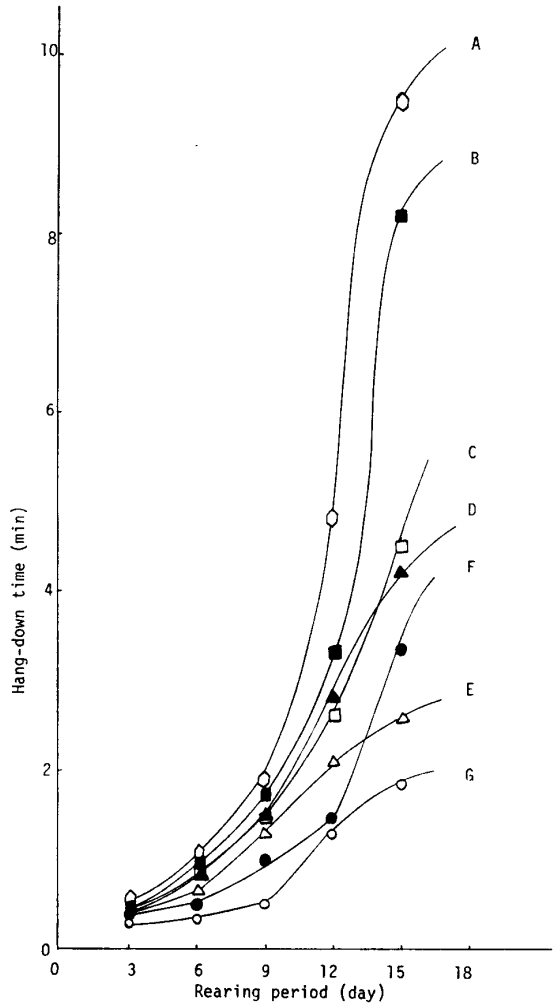

Fig. 2 Relationship between rearing period and hang-down time by mice dosed with various teas

A: Refined green tea, B: Green tea, C: Oulong tea, D: Coarse tea, E: Unpolshed rice tea, F: Black tea, G: Water (Control)

Table 2 The typical composition in various teas

Tea	Amino acid (%)	Ascorbic acid (%)	Caffein (%)	Tannin (%)
A	4.6	0.2	3.7	10.0
B	1.4	0.3	2.3	13.0
C	—	0.0	—	—
D	1.0	0.2	2.0	11.0
E	0.7	0.1	1.2	6.5
F	—	0.0	2.7	20.0

A: Refined green tea, B: Green tea, C: Oulong tea, D: Coarse tea, E: Unpolished rice tea, F: Black tea

in teas increased in the order green tea, refined green tea, coarse tea and unpolished rice tea. The ascorbic acid is considered to show an action as vitamin with respect to oxidation-reduction system in vivo. The contents of caffein in teas increased in the order refined green tea, black tea, green tea, coarse tea and unpolished rice tea. Caffein is known as cardiac and excitable action, and are contained more abundantly in coffee berry and tea leaves. Lastly, the contents of tannin is found in aboundance in teas increased in the order black tea, green tea, coarse tea, refined green tea and unpolished rice tea. The tannin occurs polyvalent phenol acid by hydrolysis is widely distributed in plants. Concerning the composition of four kinds in teas, the substants with respect to the motility of mouse are considered to be amino acid and ascorbic acid.

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