

CLINICAL EFFECTS OF GINSENG PREPARATION

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Several papers concerning Ginseng root in the pharmacological literature have reported that some fractions of Ginseng root have central nervous system stimulant and analeptic activities (1), or stimulate the mobility of digestive system (2). Water-alcohol extracts of Ginseng root produced smooth muscle contraction and had stimulant effects on central nervous system as measured by the pole climbing test (3, 4). Pure Ginseng saponins (Panaxosides A-F) and their sapogenins (panaxadiol and panaxatriol) exerted a stimulant effect measured by the endless rope method (5).

Whereas the stimulant effects of Ginseng root is quite obvious in animal experiments, it is less obvious in human experiments.

The idea of the present investigation was to apply methods previously used in a coffee test (6), to two ginseng-vitamin preparations and placebo.

Two problems were supposed to be answered by these tests:

- 1) Can any stimulatory effect be demonstrated in the two ginseng-vitamin preparations?
- 2) The difference between the two preparations (Gerikomplex and Geriatric) is the occurrence of diethylaminoethanol in Geriatric. Does the difference influence the effects?

Experimental

Methods and material

The experiment was designed as a double-blind-test lasting 33 days. Students, male and female (age: 22–28 years), attending the same university course served as volunteers. The volunteers were thus divided at random into three groups. Each group, which contained 10 students (5 male and 5 female) gets the same medication during 33 days, namely 1 capsule morning and 1 capsule evening of

- (a) Geriatric Pharmaton
- (b) Gerikomplex Vitamex
- (c) Placebo

Each volunteer got numbered envelopes containing two capsules for each day in order to control the medication. The two tests, the "Spiral Maze Test" (7) and the "Letter Cancellation Test" (6) were generously supplied by the Laboratory of clinical stress-research, Karolinska sjukhuset, Stockholm (Dr. Lennart Levi (head of dept.) and Dr. Jan Fröberg).

Spiral maze test

The test used is a modification of that described by Gibson (7). Within 25 seconds the test subject shall move a pen from the center to the outer end of the spiral maze with his elbow elevated without touching any of the 54 small rings in the maze (Fig. 1). The number of errors (touching the small

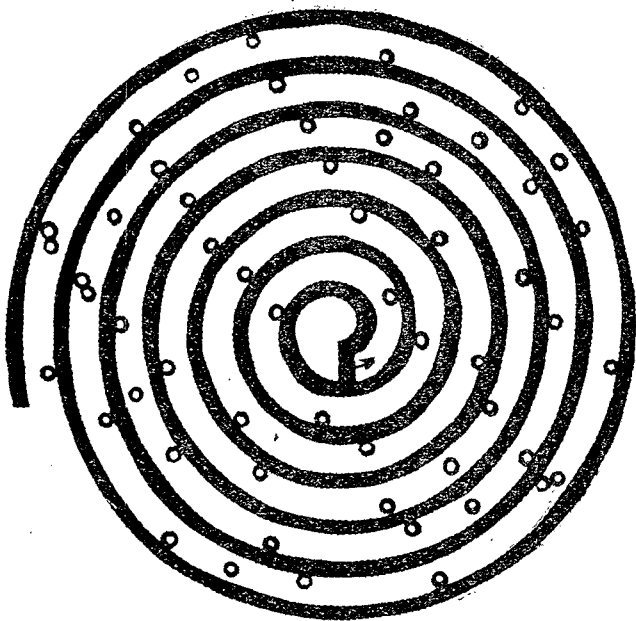


Fig. 1. The printed form for the spiral maze test.

rings) was calculated for each test subject and the mean is calculated as described below in the statistics.

Letter cancellation test

A multiple instruction cancellation test according to Fröberg *et al.* (6) was used. The task for the test subject is to cross out letters according to three different rules applied simultaneously in a list of 20 lines of randomly grouped letters. The time limit for this test was 5 minutes. Different lists of letters were given each time of testing, but the rules were always the same:

- 1) Cross each letter that is situated between two vowels: Text: bu a ypt: Crossed letters: bu ypt
- 2) Cross each letter, that is situated immediately after a similar letter:
Text: app ke e: Crossed letters: ap ke
- 3) Cross each pair of letters that follows another pair of letters:
Text: xy ir so: Crossed letters: xy

Figure 2 shows an example of a test. The number of errors made by each test subject and the mean of each group was calculated as described below under statistics. Before starting the medication period there was a period for one week of training of both tests.

1. ir jf ktvu r otre nm j dhry t ksl f hffj d ry ok fl ritr n i
2. l yyrt tr i arym nm fk l d oeür ruuw k jsh d l mmd n h o qbc
3. ld dlit d ire a orl fh kr ms jru d k a ar kl vdt t yeu toc
4. ldot tv te kszy d er hst f m c vq wwm t urej d js t rplk lmn
5. luy p om nr kddj r mo l erfs f qtw wk mfot r m hsd s t lgu tr
6. k msi r yeef f al yr mt kd diry m he k l kddl e it ej m lqi
7. ldm m tuey r osmh m fkd q tvrue d gh ku l lir mn h kjiu sjt
8. llkg gh ji p ewr q tw k kd i mdjk hffj jg ry t althdk o n m
9. mmhj k lh ur esft j uy ytt k mhu l oik f g j d rre i a dkqw
10. k gdj f ue r itul c m ndk t tjdd l j sur e t nah d djt lf i
11. km n dk tio a wza e k hdd g k kgl s h ere o ajdy rk d khp ac
12. llfj d k kri s g kaah d y en e d iruy s skl m mfku sk d m r
13. ve ft jsii r rkb n m mft r tu yb djg n io t agd e ry in l od
14. te u net r kkr r ys s kfu yr hn m d gr n yey r odn m mnh p
15. tuj n hdg r kl lri t uor e u eadh q w wr e r hs gr n ja n
16. kkfl e etr e gdi o etyr e k mn jt d lt o usk y ieu r isl vy
17. dmng f fut ti osmf mg jt n gkli r eky mn gw wlj ndi kk lio
18. bvur eg ndjg m k t o etyr r h sjyr e o obm g gru d lk i h
19. nnfh d drue jg ki nf kti t oes nk lw ohnm utl s s lsk idfg
20. rov o qqi d oer rni md fk daty ssk mddu er ny sia oei n oq

Fig. 2. An example of the printed form for the letter cancellation test.

Statistics

The pharmacologic effect of both methods was computed as the post-medication deviation from the pre-medication threshold values as follows. In each test subject X_0 denote the pre-medication value. X_1, X_2, \dots, X_{10} the first to the tenth post-medication value, respectively. A value, Y , of the pharmacologic for each test subject is derived from the following formula: $Y = X_1 + \dots + X_{10} - 10X_0$

Y represents the response of each subject, and might be called "the area under the curve". On the basis of the Y values for the test subjects with the same medication, the mean and the standard error of the mean were calculated for each drug. The significance of the pharmacologic effect was tested by t-analysis.

The means of X_0, X_1, \dots, X_{10} were computed for each drug treatment and were symbolized by X_0, X_1, \dots, X_{10} . In the figures 3 and 4 X_0 was put in the origo. The deviations of X_1, X_2, \dots, X_{10} from X_0 were plotted in figures 3 and 4 to visualize the variation in the pharmacologic effect of the various medications during the post-medication period.

Results and discussion

In the spiral maze test (fig. 3), which shows the psychomotor function of the subjects both Geriatric and Gerikomplex showed a significant effect ($p < 0.01$), which means that the number of errors was diminished. However, no difference between Geriatric and Gerikomplex could be demonstrated.

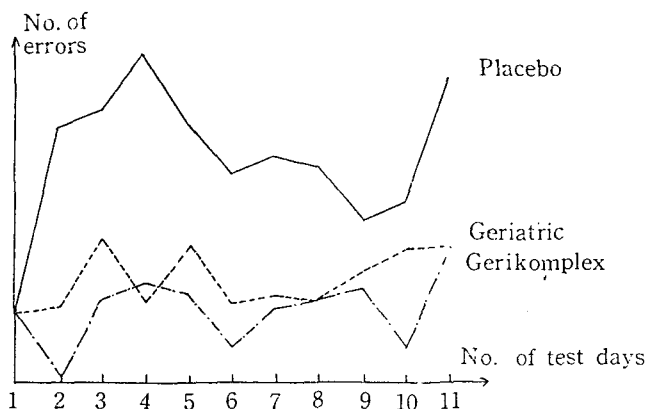


Fig. 3. The result of the spiral maze test. The mean of the number of errors made by each group (Placebo, Geriatric, Gerikomplex) is plotted for the 11 times the test was performed.

In the letter cancellation test (fig. 4), which shows the simultaneous capacity for one type of intellectual work also both Geriatric and Gerikomplex showed a significant effect ($p > 0.01$) and analogously no difference between the two preparations could be demonstrated.

Thus, it has been found with the methods used that both preparations Gerikomplex and Geriatric exert a favourable effect on psychomotor function

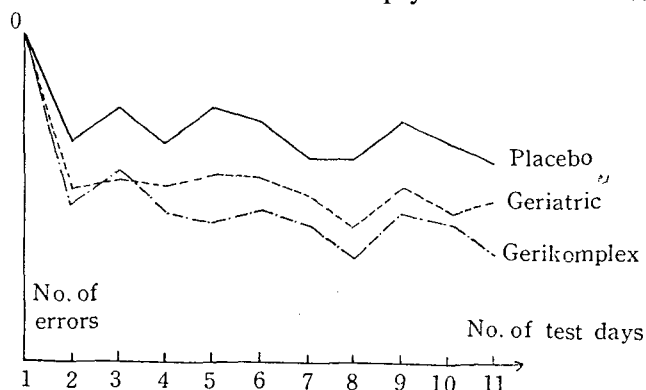


Fig. 4. The result of the letter cancellation test. The mean of the number of errors made by each group (Placebo, Geriatric, Gerikomplex) is plotted for the 11 times the test was performed.

and on the simultaneous capacity of young healthy Swedish students.

Using these two methods it could not be demonstrated that the effect of Geriatric was superior to that of Gerikomplex. It might therefore be some doubt of the therapeutic value of diethylaminoethanol. At least its value has to be proven by other methods or arguments.

Since a positive effect could be demonstrated by these two methods in healthy students, then it might be concluded that a favourable effect also could be predicted for geriatric patients.

Summary

In a double-blind test performed for 33-days on healthy students 2 capsules daily of Geriatric Pharmaton (ginsengextractvitamins and diethylaminoethanol) and of Gerikomplex Vitamex (ginsengextract vitamins but *no* diethylaminoethanol) showed a significant positive effect on psychomotor activity and simultaneous capacity. With the two methods used no difference between the preparations could be demonstrated.

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