8-P39

THE EFFECT OF INGREDIENTS IN LIVESTOCK PRODUCTS ON INEBRIATION AND CRAPULENCE.

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BACKGROUND:

Although a large number of studies have been conducted on the functionality of ingredients in livestock products, few studies have examined the preventive or lenitive effects on inebriation and crapulence. Crapulence is a very serious problem for minor drinkers, but so far studies on prevention have been limited. In particular, little attention has been given to the effect of ingredients in livestock products on crapulence.

OBJECTIVES:

The objective of this study was to investigate the preventative and lenitive effects of "powdered bile from bovine" and "hydrolyzed animal protein from swine liver" on inebriation and crapulence, with a clinical demonstration using a placebo controlled double blind test.

MATERIALS AND METHODS:

Test materials

1. Powdered bile from bovine ··· The bile from bovine gallbladder was powdered using a spraydryer.
2. Hydrolyzed animal protein from swine liver ··· Minced swine liver which was hydrolyzed by an enzyme, and it's supernatant liquid was powdered using a spraydryer.

Methods

A clinical demonstration using a placebo controlled double blind test while drinking, was performed with 22 subjects. The subjects were divided into two groups of 11 subjects each, based on replies to a questionnaire regarding the degree of crapulence and inebriation. One group was administered test materials (S group), and the other group was administered a placebo (P group). In both groups, we establish three subgroups of drinking (A, B and C) based on the replies to the questionnaire. Thirty minutes before the clinical demonstration, all subjects received test materials orally once.

1. Limitation of drinking

Group A consumed from 1.5 to 2 units of alcohol. Group B consumed from 2 to 3 units of alcohol. Group C consumed from 3 to 7 units of alcohol. One unit was equal to one bottle of beer (633 ml), containing about 32 ml of alcohol.

2. Dose levels

S group ··· (1)Powdered bile from bovine : 120 mg per subject.
(2)Hydrolyzed animal protein from swine liver : 150 mg per subject.
The test materials were mixed and made into three tablets (550 mg per tablet).

P group ··· Three placebo tablets.

Measurement factors

To assess the symptoms of inebriation and crapulence objectively, we selected seven measurement factors as follows. Measurements were done "before drinking", "during drinking", "just after drinking", and "5 hours after drinking to the next morning".

1. Questionnaires and medical examinations.
2. Measurement of alcohol concentration in expiration.
3. Kraepelin census (simple Kraepelin census of Uchida method).
4. Measurement of elapsed time while standing on one leg with eyes opened.
Reflection of the function of the semicircular canals and the cerebellum.
5. Measurement of shaking area with eyes closed.
6. ATMT (Advanced Trail Making Test).
The subject pushed random figures from 1 to 25 on a touch panel in order. ATMT is a common neuropsychological test which is easy to administer and sensitive to brain damage.
7. Chaos analysis concerning the pulse wave of a finger tip derived from lefthand index finger.
The values were used to derive a correlation dimension value which reflected the chaos complexity. The values indicated the degree of inebriation.

RESULTS AND DISCUSSION :

1. Questionnaires and medical examinations.

Questionnaires assessed the "degree of vomiturition and vomiting during drinking" and "the preventive effect of crapulence". The symptoms were mitigated in S group compared with P group. Medical examinations investigated "stomach retching", "vomiturition and vomiting", and "headache". All symptoms were mitigated in S group compared with P group.

2. Measurement of alcohol concentration in expiration.

The results are shown in Fig.1. Measuring times were just after drinking and the next morning. There was no significant difference between the groups. Measuring data varied widely and showed large differences between individuals. Therefore, no correlation was

detected between the quantity of drinking and alcohol concentration just after drinking.

3. Kraepelin census (simple Kraepelin census of Uchida method).

The results are shown in Fig.2. We compared the results before drinking and those of the next morning. Clear differences were shown in S group compared with P group.

4. Measurment of shaking area.

The results are shown in Fig.3. S group's shaking area was smaller than P group's area the next morning. There was a marked difference between the groups.

5. Measurement of elapsed time while standing on one leg with eyes opened.

The results are shown in Fig.4. Five hours after drinking, greater functional equilibrium disturbance was shown in P group compared to that in S group.

6. ATMT

The results are shown in Fig.5. Measuring time for subjects to push random figures from 1 to 25 on the touch panel in order. A marked difference was observed between S group and P group just after drinking.

7. Chaos analysis concerning the pulse wave of a finger tip.

The results are shown in Fig.6. Although a recoverable tendency of the correlation dimension value was shown in S group, no such tendency was found in P group 5 hours after drinking.

CONCLUSION:

(1) Test materials prevented symptoms (vomiturition and vomiting) during drinking.

(2) Based on a medical examination, the test materials reduced symptoms of crapulence the next morning.

(3) Based on the results of measuring the "shaking area", "elapsed time while standing on one leg with eyes opened", and "chaos analysis concerning the pulse wave of a finger tip", the test materials reduced the damage caused by drinking on the center of the cerebellum to fulfill the sense of equilibrium.

(4) Based on the results of ATMT and Kraepelin census (Uchida method), the test materials reduced the damage by drinking on the cerebrum to fulfill higher mental ability.

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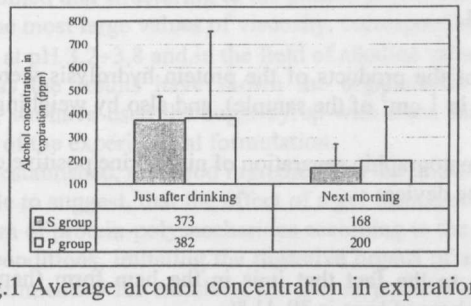

Fig.1 Average alcohol concentration in expiration.

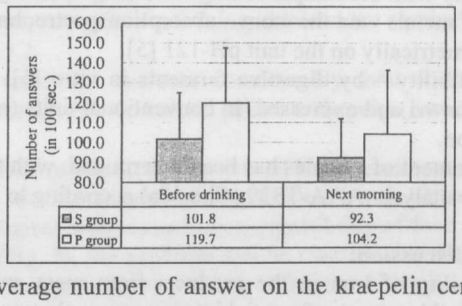

Fig.2 Average number of answer on the kraepelin census.

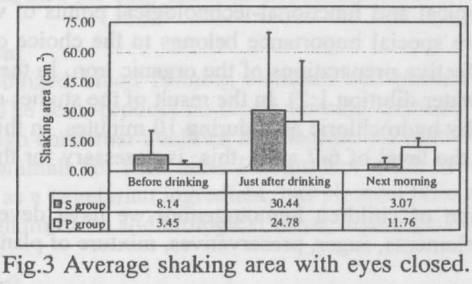

Fig.3 Average shaking area with eyes closed.

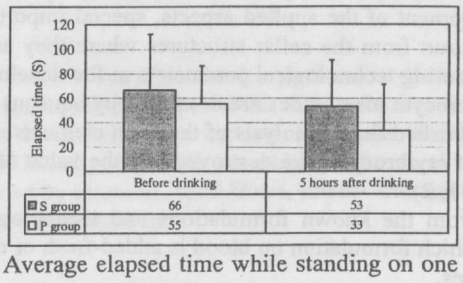

Fig.4 Average elapsed time while standing on one leg with eyes opened.

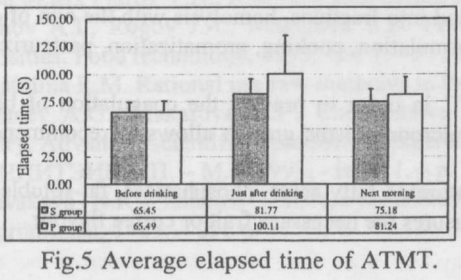

Fig.5 Average elapsed time of ATMT.

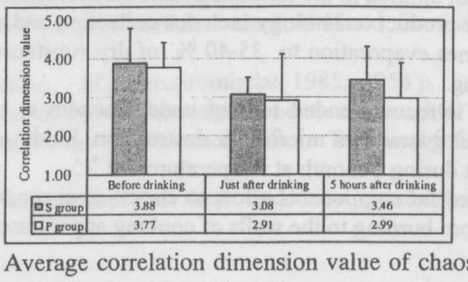

Fig.6 Average correlation dimension value of chaos analysis concerning the pulse wave of a finger tip.