

DURIAN AND ALCOHOL — A PRELIMINARY REPORT

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INTRODUCTION

The durian fruit (*Durio zibethinus* Murray) is well known. It is found in Malaysia, Singapore and in many parts of Southeastern Asia (Reksodihardjo, 1963) and is a delicacy to most of the local populations, and others who have acquired a taste for it. It is strongly believed by the people of Malaysia and Singapore that durian, when taken with alcohol, causes ill effects in the form of fatalities. This belief was recorded by Gimlette as long ago as 1923 when he briefly mentioned that durian should not be eaten with brandy. In 1941, Singh mentioned in a case report, that mysterious deaths had sometimes followed the consumption of durian and alcohol. This author reported a case of acute haemorrhagic pancreatitis ending in death, which followed the consumption of durian and alcohol.

There appears to be no other clinical reports since that of Singh in 1941. In view of the strong belief which is prevalent, the paucity of authenticated clinical reports and the absence of experimental work, the authors decided to carry out some preliminary investigations which are reported in this communication.

METHOD

White mice of either sex, weighing 20 g. were used in this investigation. Food was withdrawn 8 hours before the start of an experiment, but the animals were allowed free access to water. All experiments were conducted at normal room temperature (28°-30°C).

Ethyl alcohol was diluted with distilled water to give a final concentration of 10% (v/v).

The aril of fresh durian was collected, weighed and homogenised. Homogenates were made up to a final concentration of 0.8 g. per ml. with distilled water and kept at room temperature.

Durian in alcohol homogenates were prepared so that 1 ml. contained 0.8 g. of the fruit and also 10% (v/v) ethyl alcohol.

All test substances were given orally by means of an intragastric tube. Two types of experiments were carried out. In the first, 1 ml. durian in alcohol homogenate was given to

different groups of animals at 0, 2, 4 and 6 hours after preparation. These homogenates were kept at room temperature after preparation. In the second type of experiment, durian homogenates were given in a volume of 1 ml. to separate groups of mice at 0, 2 and 4 hours after preparation. Ethyl alcohol (10%) was then given in a volume of 1 ml. to all the groups at the 6th hour. The mice were carefully observed before and after administration of the test materials and the sleeping time of those that were affected was recorded. This was assessed from the time they were unable to right themselves, within 1 minute of being placed on their backs, until the righting reflex returned.

RESULTS

The Effect of Durian in Alcohol

Table I shows the accumulated data from experiments in which mice were given a homogenate of durian in alcohol. The homogenate was administered to the various groups of animals immediately (0), 2, 4 and 6 hours after preparation. Durian homogenate alone was given to one control group and ethyl alcohol (10%) to the other.

TABLE I
MICE GIVEN DURIAN IN ALCOHOL
HOMOGENATE

Time (Hours) After Preparation of Homogenate	Number Tested	Number Sleeping
0	15	—
2	14	—
4	12	—
6	12	—
Control (Durian alone)	10	—
Control (Alcohol alone)	10	—

The alcohol given to the control group and to the other groups had the effect of making the mice unsteady in gait but did not cause any to sleep. The durian control group appeared normal and were similar in activity to untreated mice.

The Effect of Durian Followed by Alcohol

Table II shows the accumulated data from experiments in which separate groups of mice were given durian homogenate 2, 4 or 6 hours before administration of ethyl alcohol (10%).

The effect of alcohol given to all the groups, including the control, was similar to that previously observed, except that some mice went to sleep. Out of the 60 mice given alcohol 2 hours after durian, 4 slept with a mean time of 31 ± 10 minutes. The mean time of onset

TABLE II

MICE GIVEN ETHYL ALCOHOL 2, 4
AND 6 HOURS AFTER DURIAN
HOMOGENATE

Time (Hours) After Admin- istration of Durian	Number Tested	Number Sleeping	Mean Sleeping Time \pm S.E. (Minutes)	Mean Time of Sleep Onset \pm S.E. (Minutes)
2	60	4	31 ± 10	16 ± 1
4	50	7	44 ± 11	19 ± 3
6	50	6	44 ± 13	19 ± 6
Control (Alcohol only)	60	9	50 ± 10	18 ± 2

S.E. = Standard Error of the mean.

of sleep was 16 ± 1 minutes. Fifty mice were given alcohol 4 hours after durian and 7 went to sleep, the mean sleeping time was 44 ± 11 minutes and onset was 19 ± 3 minutes. A similar mean sleeping time of 44 ± 13 minutes was also seen when 6 mice went to sleep out of the 50 given alcohol 6 hours after durian and their mean time of sleep onset was also similar (19 ± 6 minutes). In the control group 60 mice were used and after receiving only 10% alcohol, 9 slept. The mean sleeping time was 50 ± 10 minutes and the mean time of onset of sleep was 18 ± 2 minutes.

The differences between the means were examined by Student's 't' test but were found not to be significant. The smallest P value was 0.3.

DISCUSSION

The results obtained from this preliminary investigation do not support the belief that durian when taken with alcohol is dangerous. In the first phase of this investigation, durian

in alcohol homogenate was given to the mice. This preparation had the effect of only making the animals unsteady in gait, as was seen in the control group receiving only alcohol. What can be deduced from this experiment is that durian, when left in contact with alcohol up to 6 hours, does not cause effects which differ from those of the fresh preparation.

The next stage of the investigation was to administer the durian homogenate first and then alcohol later. In this experiment, out of the 60 mice used as controls, receiving only alcohol, 9 slept. When the numbers of those sleeping in the various test groups are compared with those of the control it is seen that the percentage sleeping in each group is similar. An exception was the group which received alcohol 2 hours after durian in which the percentage was almost half that of the others. A possible explanation is that the durian present in the stomach might have affected the absorption of the alcohol given 2 hours later. However, the mean sleeping time as well as the mean time of onset of sleep did not differ significantly from the others. This experiment was carried out to investigate the possibility that durian, after absorption, might interact with alcohol to cause toxicity. The results, however, do not suggest this.

In the first experiment, no mice in the control or other groups fell asleep under the influence of alcohol. The dose of alcohol given in these experiments was selected so as not to cause this effect, but only to render them unsteady in gait. However, when the same dose of alcohol was used in the second experiment, it caused some mice to sleep in all the groups. This might be attributed to variation within the species or the reason why this effect did not occur in the first experiment could be due to (a) the groups being small, or (b) the presence of durian affecting alcohol absorption. The latter possibility is supported by the observation that a smaller number of mice slept when alcohol was given 2 hours after durian.

The authors are personally acquainted with people who have taken durian with alcohol in the form of brandy or whisky. The alcohol was taken together with, or 1 to 6 hours after a durian meal. None of them felt any ill effects, except for one person who experienced discomfort from fullness of the abdomen and flatulence. In the present experiments, it was noticed that some of the mice had distended abdomens. This did not occur in those receiving alcohol only, thus suggesting the possibility of fermentation. Fermentation or volume expan-

sion due to reaction was not detected in the durian in alcohol homogenates which were kept up to 8 hours after preparation, but as this observation was made in vitro, it does not negate the possibility suggested. Stanton (1966) quotes that durian contains total carbohydrates up to 34.1% in which sugars (12%) and starch (12%) are present. It is quite possible that abdominal discomfort could be due to the durian itself which also is not easily digested (Reksodihardjo, 1963). Moreover, some people have experienced discomfort after taking only the fruit. It may be so that alcohol plays a contributory role in facilitating the digestive disturbances which are due solely to the fruit.

The dose of alcohol administered to the mice in this investigation was sufficient to make the animals unsteady in gait. Also, the amount of durian given was far in excess of that which could possibly be consumed at one time by a single person. The amount of aril given to each mouse, when calculated for a 70 Kg. adult, was equivalent to approximately 6 lbs. Even in spite of these excessive amounts, the results were of a negative nature. The present findings

therefore do not indicate any basis for the belief that ill effects in the form of toxicity or deaths, can occur when alcohol is taken with durian. The possibility of durian potentiating the effects of alcohol also appears remote. It should, however, be remembered that these deductions have been made from experiments on small animals using purified alcohol.

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