

During the first two weeks of testing the animals were provided food and water, only in the experimental cage viz for one hour during which time their activities and food and fluid consumption were monitored. They were returned to their home cages for the rest of the day where no food or fluids were available. Daily records of body weights were also maintained.

After this period the animals were immobilized 18 hours every day (from 4 P.M. to 10 A.M. the next day) from Monday to Saturday and released only before their activity was tested for one hour. During this period also food and fluids were provided only during one hour of stay in the experimental cage. Immobilization was carried out by placing them in a cage made of malleable wire netting which could be adjusted to conform to the size of the body so that movements of the body

were completely restricted. The activity shifts and food and fluid intakes during immobilization-stress test period were compared with the pattern obtained during the deprivation test period.

Data were analysed and p value determined. P value less than 0.05 was considered significant.

RESULTS

High immobilization stress lowered body weight from an average of 267.19 gms in the deprivation period to 226.06 gms during the immobilization period which was found to be significant. This is in spite of the food intake being almost the same for the deprivation and immobilization periods. The water intake showed a significant increase under immobilization stress (Table I). Immobilization decreased the alcohol intake in all except three rats which showed an increase.

TABLE I : Body weight, food, water and alcohol intake (Mean±SEM) in 10 rats under conditions of food deprivation and immobilization (*P value <0.05).

	<i>Body weight (gms)</i>	<i>Food intake (gms)</i>	<i>Water intake (ml)</i>	<i>Alcohol intake (ml)</i>
Food deprivation	267.19±32.85	5.83±1.76	4.22±2.05	4.01±2.63
Food deprivation and Immobilization	226.06±26.68*	5.91±1.75	7.53±3.16*	2.83±3.18

TABLE II : Time in minutes (± SEM) spent in each chamber by 10 rats under conditions of food deprivation and immobilization (*P Value <0.05).

	<i>Male</i>	<i>Female</i>	<i>Food</i>	<i>Water</i>	<i>Alcohol</i>	<i>Grooming</i>
Food deprived	3.78±2.86	11.92±7.7	20.37±8.27	3.11±1.27	2.79±2.16	9.7±6.2
Food deprived and Immobilization	2.98±4.16	12.45±11.1	24.13±6.68	6.03±4.13	2.25±2.73	21.29±7.24*

The rats showed no interest in the receptive female under stressful conditions. They became docile and indifferent towards the male rats (Table II). The time taken for grooming, rearing, sniffing and pawing the cage floor increased significantly. Their activity increased as the food and fluid deprivation continued and when immobilization was superimposed on deprivation the pattern showed an overall increase in activity.

Fig. 2 shows the activity pattern. Each day the five consecutive lines depict the food, water, alcohol, male and female compartments in that order. During the first five days of deprivation, the rats moved only between food and water compartments, exploring the other compartments frequently during the latter half of the deprivation period. The activity increased much earlier and was much more during added immobilization.

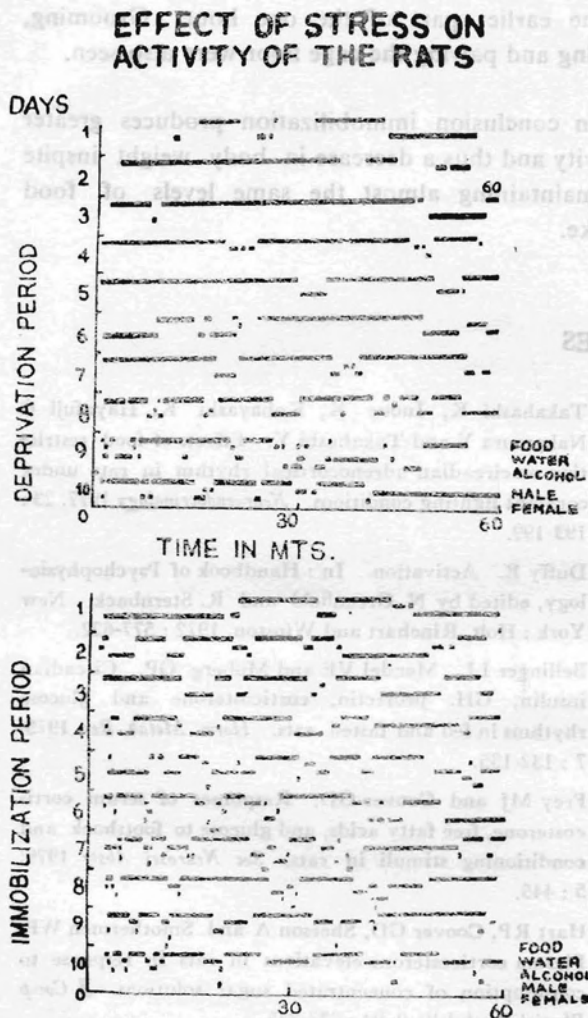


Fig. 2. : The numbers on the left hand side indicate the number of days. Time in minutes is shown at the bottom of the graphs. The various compartments of the cage are shown in the right hand side at the bottom.

DISCUSSION

It was observed that the animals during the period of one hour food and water presentation adjusted the food and water intake almost to the ad libitum levels. They consumed varying quantities of alcohol during that one hour period. The motivation to reach and aggressiveness towards the male was stronger at times than the motivation to

approach a female even though proceptivity on the part of the female was observed. As the days of food deprivation and later immobilization stress went by, the interest in both male and female rats was less. This may be due to the increased secretion of prolactin released by stressful conditions, which are known to produce hypogonadism as the gonadotropin secretion is decreased (2).

The subjects spent more time in the food chamber trying to eat as much as they could during that one hour. High stress increased the time spent in the food chamber though the amount eaten was nearly the same, whereas grooming took most of that one hour. This is consistent with the results obtained by others who showed that rats deprived of food and subjected to stress ate less but increased grooming (3). Others who administered corticotropin releasing factor (CRF) intracerebroventricularly have shown that CRF may have an appetite suppressing action (4,5,6).

It has been shown that food and/or water deprivation schedules that restrict the rat to a short period of consumption daily results in elevation of the plasma concentration of corticosterone in the hours preceding the daily feeding or watering (7,8,9,10,11). Deprivation per se, without conditioning to meal cues, increases general activity and food seeking behaviours (12), but does not raise corticosterone levels for at least two days of deprivation (13,14,15,16). Stress-released CRF is liberated directly into the CNS and may exhibit a neurotropic action important for mobilizing behavioural responses to stress (17). CRF produces a dose dependent locomotor activation in rats (18). This activation particularly at lower doses is characterized by increased locomotion, sniffing, grooming and rearing, behaviour consistent with general behavioural arousal. At higher doses more bizarre behavioural effects are observed including elevated walking, repetitive locomotion and pawing rapidly against the cage. In the present study the behaviour

of the rats seen only in deprivation was like that seen with the lower dose infusion of CRF while the superimposed immobilization produced a behaviour similar to the one seen with higher doses of CRF infusion. This also accounts for the increased activity seen in food and water deprivation and an inconsistent activity pattern seen during immobilization wherein the activity was mainly confined

to the earlier part of the one hour. Grooming, rearing and pawing the cage floor were also seen.

In conclusion immobilization produces greater activity and thus a decrease in body weight inspite of maintaining almost the same levels of food intake.

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