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Mechanism of Anorexia and Effect of Liv.52 on Food Intake

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The regulation of food intake represents a kind of rhythmic recurrent physiological adjustment, such as seen in respiration, water balance, sleep and many other 'life's activities'. The cycle of hunger-appetite satiety governs the mechanism.

Jean Mayer defines these terms as follows:

Hunger: The complex of unpleasant sensations felt after prolonged food starvation which will impel an animal or human being to seek work or fight for its immediate relief by ingestion of food–thus exhibiting hunger behaviour.

Appetite: The complex sensation upto a point pleasant or at least not unpleasant by which the organism is aware of desire for and anticipation of ingestion of palatable food. Specific appetites relate to desires for specific foods.

Satiety: It is the complex of sensations which impel an organism to stop eating because hunger and appetite have been satisfied even though food is still available. It is a pleasant sensation of comfort and well-being, which results when a person has ingested a physiologically satisfactory amount of food.

The hunger and satiety centres in the hypothalamus regulate the food intake. The frontal and temporal lobes contain the higher centres. Anand believes that these higher centres are concerned with discriminatory behaviour rather than hunger.

Hunger and Satiety Signals: There are a number of theories regarding the production of these signals. A few of them are as follows:

i. Hypoglycaemia increases appetite. Administration of glucose intravenously reduces or allays hunger. However, in diabetes mellitus hunger is present with hyperglycaemia. Mayer has suggested that peripheral arteriovenous glucose difference may be the guiding factor in these cases. When the peripheral arteriovenous blood glucose difference is reduced (i.e. when glucose utilisation by tissues is slow, therefore glucose is not available) hunger is experienced. Conversely when the difference is high a subjective feeling of satiety results.

ii. Lipostatic Hypothesis – Van Itallic (quoted in Best & Taylor) said that hunger is correlated with the higher levels of free fatty acids in the blood – indicating mobilisation of fat.

iii. Emptiness of the stomach leads, to hunger pangs and distension of the stomach, reflex stimulates the satiety centre.

iv. Thermostatic Regulation: Brobech advanced the hypothesis that animals eat to keep warm. He postulates that heat generated by food – specific dynamic action – is the variable that is metered in the C.N.S. and functions as a satiety signal.

v. Liver undoubtedly plays an important role in determining the appetite. When liver is damaged e.g. in infective hepatitis – immediate loss of appetite takes place. After every meal the

essential nutrients are converted into metabolites in the liver. They finally enter the blood and are circulated. These metabolites may stimulate feeding centre or inhibit the satiety centre – thus leading to more food consumption (Stanley Davidson *et al.*).

Anorexia: This denotes a pathological absence of appetite. At all ages anorexia is a constant accompaniment of all acute and chronic diseases except in certain neuroendocrinological disorders like diabetes, hyperthyroidism, brain tumours etc. Sometimes negative behaviour in children may lead to reduced food intake. Drugs often influence appetite. Antibiotics increase appetite presumably by controlling infection, but on prolonged use may decrease appetite by destroying the normal bacterial flora. Vitamin B_{12} in large doses also increases appetite. Reserpine increases food intake and thereby may cause obesity. Amphetamine accelerates weight loss by inhibiting food intake i.e. causes anorexia. The thyroid hormone increases appetite but does not cause weight gain. Anabolic steroids and testosterone increase the weight without much effect on appetite. Corticosteroids increase the appetite though the exact mechanism is not known. But they cause retention of fluids and other side effects.

Kale *et al.,* have shown that by administering Liv.52 to albino rats a significant gain in weight was noticed during 3rd and 6th weeks.

Sheth *et al.,* have observed in a clinical study that administration of Liv.52 relieved the symptom of anorexia due to various causes.

Damle and Deshpande have shown that Liv.52 has a marked anabolic effect both in tuberculosis and non-tubercular patients and the gain in weight noticed was 2 to 6 lb., in a period of one to two months of therapy.

MATERIAL AND METHODS

In order to assess the effect of Liv.52 on appetite, a clinical study was undertaken on 400 children, upto 12 years of age, attending the Paediatric Out-patients of the Lokamanya Tilak Municipal General Hospital, Sion, Bombay. These children were brought to the hospital for various minor and major complaints such as cold, cough, fever, diarrhoea, respiratory infections, etc. After these ailments were cured, most of these children were in a run down condition and their presenting complaint was anorexia.

Out of the 400 children every third child was kept as a control. So in all 263 children were given Liv.52 while 137 children were on placebo. No vitamins or general tonics were given during this period.

Total No.	Liv.52 Group	Control group (Placebo)
400	263	137

All these 400 children were followed up for a period of six months. Long period of follow-up was particularly chosen so that any side effects of the drug, if present, could be noticed.

The following dosage of Liv.52 was adopted. Infants below 2 years were given 10 drops 3 times a day. Children between 2 and 5 years were given 20 drops three times a day and children above 5 years were given 2 tablets 3 times a day.

Observations: Four hundred children attending L.T.M.G. Hospital, Sion, attending for various ailments were given specific therapy for the particular diseases. After these ailments were cured, they were selected for the trial. Out of these, 263 were given Liv.52 while 137 were given placebo and acted as controls.

The following Table shows the effect of appetite both with Liv.52 as well as with placebo.

	Liv.52 Group	Control Group (Placebo)
Total No.	263	137
Appetite increased	167 (63.5%)	96 (22.7%)
Appetite same	82 (31.2%)	96 (70.5%)
Appetite decreased	14 (5.3%)	11 (6.8%)

It is seen that in 63.5% of Liv.52 series there was a marked increase in appetite while in control series only 22.7% showed some increase of appetite. The appetite remained the same in 31.2% of Liv.52 series and in 70.5% in control series. It was also observed that appetite decreased in only 5.3% of Liv.52 while this phenomenon was seen in 6.8% of control series.

With the improvement in appetite in the Liv.52 group there was a marked feeling of well-being, bowel movements became regular and stools were well formed. In addition there was gain in weight, which was more notable in underweight children.

Duration of effect: Increase in appetite was noticed within 8 days of starting of the therapy. However, this salutary effect lasted as long as Liv.52 therapy was continued and gradually wore off after its withdrawal.

Side effects: In children with a history of diarrhoea, the drug aggravated the condition. The diarrhoea disappeared on reducing the dose or withdrawal of the drug in some cases. No other side effect was observed.

SUMAMRY

The mechanism of anorexia is discussed and the possible theories of its causation are mentioned. The drugs, which increase and decrease the appetite, along with their actions are mentioned.

Four hundred patients attending L.T.M.G. Hospital showing anorexia as a presenting symptom during convalescence were studied to observe the effect of Liv.52, while 137 patients were given, placebo and acted as controls.

Out of 263 patients treated with Liv.52, 167 (63.5%) showed marked increase in appetite and after treatment the children showed gain in weight, a sense of well-being, improved bowel action while in the control group only 32 (22.7%) children showed increase in appetite.

No toxic effects of the drug were observed. The only side effect was that in those children with a previous history of diarrhoea the dose of Liv.52 had to be reduced as with normal dose diarrhoea appeared and in some cases the drug had to be withdrawn.

The increase in appetite was noticed 8 days after starting of therapy.