

NOTES

Effect of Fasting and Different Diets on C^{14} Incorporation from U- C^{14} Glucose into Glycogen and Carbon Dioxide by Cerebral Cortical Slices of Rats.

P. VISWESWARAN†, BINOD KUMAR‡, A.P. SINHA**, A. SURAIYA, A.K. BRAHAMCHARI and S.P. SINGH*

Post-Graduate Department of Chemistry

Gaya College, Gaya 823 001, India

There are some reports regarding change in the glycogen level due to fasting. Here an attempt is made by keeping the albino rats under fasting or feeding different diets on the rate of C^{14} incorporation into glycogen and carbon dioxide from U- C^{14} glucose. Our study reveals that the above conditions do not alter any significant change in the glycogen and carbon dioxide in the cerebral cortical slices of albino rats.

Studies were done previously on the effect of fasting on the amino acid content of cerebral tissues¹, on the degenerative changes in spinal cord and diminution in the glycogen content of rat brain². Here we have studied the rate of C^{14} incorporation into glycogen and carbon dioxide by using U- C^{14} glucose.

1. *Fasting rats:* Rats about 50 g weight were fasted in individual cages for 48 h and allowed water only. Cerebral cortical slices were obtained and incubated for 2 h in medium of 3.5 ml, and C^{14} incorporation into glycogen and carbon dioxide was done as reported earlier³.

2. *Rats maintained under different regimen:* Normal albino rats about 50 g in weight maintained on Anidiet (a balanced diet marketed by Chelsea Chemicals, Poona, India) for 15 days. Each rat consumed about 8 g of diet per day.¹

3. *Rats maintained on low calorie low protein diet:* Each rat weighing about 50 g was given only 4 g diet per day for 15 days containing 60% rice, 24% sucrose, 10% fibre, 3% fat, 2% minerals and 1% vitamins.

4. *Rats maintained on low calorie low protein diet supplied with 1 ml of milk:* They were fed exactly as rats of group III except that 1 ml of milk per day was given by stomach tube for 15 days. Anidiet composition: carbohydrate 68%, protein 20%, fibre 7%, fat 3% and minerals 2%.

†Dept. of Biochemistry, A.N. Magadh Medical College, Gaya-823001, Bihar, India.

‡Dept. of Chemistry, D.N. College, Masaurhi, India.

**Dept. of Zoology, Degree College, Islampur, India.

The incorporation of C^{14} from $U-C^{14}$ glucose into glycogen and carbon dioxide by cerebral cortical slices of normal rats and rats maintained under different dietary regimen are given in Table 1. It is found that changes in the diet does not significantly affect the incorporation of C^{14} from labelled glucose either into glycogen or carbon dioxide. Therefore it is concluded that fasting for limited period of 48 h or low calorie diet for 15 days or supplemented with milk does not produce any change compared with rate of glycogenesis and oxidation in slices from normal rats maintained on stock diet or balanced diet (Col. 3 of Table 1).

TABLE 1
EFFECT OF FASTING, ANIDIET, STOCK DIET, RICE DIET, RICE DIET WITH MILK ON THE C^{14} INCORPORATION FROM $U-C^{14}$ GLUCOSE INTO GLYCOGEN AND CARBON DIOXIDE BY CEREBRAL CORTICAL SLICES OF ALBINO RATS

Condition	Glycogen*	Carbon dioxide
1. Fasting ⁵	8678 ± 549	341800 ± 36310
2. Feeding Anidiet ⁵	9200 ± 907	346540 ± 22340
3. Feeding stock diet ⁵	9500 ± 608	359520 ± 11846
4. Feeding rice diet ⁵	7915 ± 467	308683 ± 37410
5. Feeding rice diet + Milk ⁵	9040 ± 914	321883 ± 23600

* $+C^{14}$ incorporation counts/min/g wet slice wt.

Cortical slices about 50 mg from rats with different diets, fasting were incubated in 3.5 ml of medium containing $U-C^{14}$ glucose (activity 1,588000 counts/min) for 2 h at 38°C.

Gas phase: Oxygen.

Diminution in the glycogen level was reported by Prasannan *et al.*⁴ in rat brain. Foster⁵ reported 50% reduction in blood sugar. There have been observations on the diminution of cholesterol, phospholipids⁶ reduction in body protein brain RNA and DNA⁷. However, Kern and Ghantus⁸ found no appreciable change in labile constituents as a result of fasting. It is interesting that in spite of so many changes taking place as a result of fasting and under-feeding, the rates of glycogenesis and oxidation are not altered in growing rats maintained under different diets in our experiments.

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