EFFECT OF FEEDING CAMEL MILK PROTEINS ON VARIOUS ORGANS OF ALBINO RATS

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INTRODUCTION

Restriction of protein in diet affects the animal adversely. Conner and Sherman (4), Armstrong (3), Estremera and Armstrong (5) and Addis *et al* (2) studied the changes produced in the nitrogen content of individual organ of albino rats after feeding them diet containing different percentage of proteins. Addis *et al* (1) estimated protein content of different tissues of albino rats, after mixing varying amounts of proteins in their diet and noted variations in their tissue proteins.

In this part of Rajasthan, camel is an indispensable and all-purpose animal, so it was a matter of practical utility as well as of general interest to investigate the effects of feeding camel milk proteins on different organs of albino rats. Hence this problem was undertaken.

MATERIALS AND METHODS

In this study, 25 albino rats of an average weight of about 150 *gm* were used. They were divided into 4 groups as follows :—

(*a*) Normal rats—10, (*b*) Rats fed on protein deficient diet—5, (*c*) Rats fed on diet containing 7% camel milk proteins—5, (*d*) Rats fed on diet containing 20% camel milk proteins—5.

Normal rats were fed usual diet containing liver, grams, minerals and vitamins. Protein deficient diet fed to group 'b', consisted of arrow-root starch 75 parts, cane sugar 10 parts, shark liver oil 3 parts, sesame oil 8 parts and salt mixture 4 parts. Group 'c' and 'd' were fed diets identical to that of group 'b' except that 7 and 20 parts of arrow -root starch were replaced by an equal amount of camel milk proteins respectively.

After feeding them diet for 3 weeks, they were sacrificed. A small portion each of brain, heart, lung, liver spleen, pancreas, kidney, adrenal and muscle was dissected, washed and weighed. These organs were then dried in an oven at 110°C for 3 hours and then their dry weights were noted. The protein contents of these tissues were determined by micro-Kjeldahl method (6). The amount of diet consumed by individual group of rats was almost the same. The results, indicating the mean percentage protein values of different tissues in various groups of animals fed on different diets have been shown in table I.

TABLE I

Showing the mean percentage protein values of different organs in various groups of rats after feeding them different diets.

Organs	*Normal diet*	*Protein deficient diet*	*Diet containing 7% camel milk protein*	*Diet containing 20% camel milk protein*
	10*	5*	5*	5*
Brain	25.65 (80.60)	23.60 (80.30)	25.72 (80.10)	26.84 (79.10)
Heart	36.96 (79.50)	25.86 (79.80)	39.31 (79.70)	41.21 (79.30)
Lung	33.25 (79.40)	23.57 (80.90)	36.75 (81.20)	37.57 (80.60)
Liver	28.84 (77.20)	19.81 (76.60)	34.84 (76.90)	36.68 (76.50)
Spleen	38.85 (79.00)	29.16 (80.50)	39.05 (79.30)	41.25 (81.20)
Pancreas	23.52 (75.00)	16.45 (76.30)	32.20 (75.50)	44.84 (76.10)
Kidney	33.74 (80.30)	23.62 (81.80)	34.79 (80.90)	37.03 (81.40)
Adrenal	36.75 (85.70)	25.16 (86.60)	41.66 (86.10)	47.25 (87.00)
Muscle	38.05 (79.10)	31.90 (81.20)	42.42 (80.10)	49.56 (80.80)

*Refers the number of rats used in each group.
Figures in parentheses indicate the moisture percentage.

RESULTS

Table I shows that intake of protein deficient diet brought about reduction in the protein content of all the organ selected for this study, when compared to normal. Feeding diet containing 7% camel milk protein resulted in an obvious rise in the protein contents of pancreas, liver, adrenal and muscle, while no rise has been detected in brain, kidney and spleen. Only a slight rise in the protein content of heart and lung have been found. Consumption of diet containing 20% camel milk protein produced a further elevation in the protein content of these organs. This rise was more or less parallel to the rise noted when diet containing 7% camel milk protein was fed. However, the moisture percentage did not show any significant variations under these conditions.

DISCUSSION

When diet rich in camel milk protein was fed to rats, an increase in the protein percentage was noted in their pancreas, liver, muscle and adrenal, possibly due to the fact that these organs

play quite an important role in the metabolic activities of the body. The essential organs like brain, heart, lung and spleen did not gain appreciably in their protein contents as their metabolic role is not so important. They are concerned mainly with the vital functions, hence can not afford to undergo any variations in their protein contents if fed on protein rich or even on protein deficient diets. Addis *et al* (1) and Conner and Sherman (4) fed different types of proteins mixed in varying amounts in the diet of animals and reported about an increase in the protein content of different organs of the body. In these studies more or less similar results have been obtained in rats by feeding them proteins derived from camel milk in their diet, thereby indicating the possibility that camel milk protein serve functions alike to other proteins irrespective of their sources.

SUMMARY

25 albino rats were divided into 4 groups and were fed (*a*) normal, (*b*) protein deficient, (*c*) low (7%) and (*d*) high (20%) camel milk proteins diets. The protein content of various organs was analysed and it was found that pancreas, liver, muscle and adrenal of rats fed on camel milk proteins showed the maximum gain in their protein contents, probably due to their metabolic functions, while essential organs like brain, heart and lung did not reveal such gain. Thus camel milk seemed to be a good source of protein and behaved alike other proteins.

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