VITAMIN B_{12} IN THE VARIOUS ANIMAL LIVERS

M.H. SEDI AND M. YAQUB

West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore

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Introduction

Beef liver contains from 0.26 to 0.58 mg./kg. of extractable vitaminB_{12}.[1] The extractability of the vitamin however, depends upon the method of extraction. Acid or alkali treatment liberated lesser vitamin B_{12} than that extracted with cold or hot water.[2] Scheid and Schweigert[1] showed that the amounts of vitamin B_{12} extracted from the beef liver either by short-term autoclaving or enzymatic digestion were almost the same. The amount of vitamin B_{12} left in the liver after extraction has not been reported.

The present work was undertaken to estimate the total as well as extractable vitamin B_{12} in the livers of cow, buffalo, sheep, goat, rabbit and chicken.

Experimental

Extractable Vitamin B_{12}.—Equal weights of five or more liver samples of each animal, after the removal of fat and epithelial tissues, were homogenised in a top drive macerator. 250 g. of this macerated liver was blended with 1.5 l. of glass-distilled water. The homogenate was heated on a water-bath to coagulate the protein and was filtered through cotton wool. The process was repeated with the residue by adding 750 ml. water. The combined filtrate was concentrated under vacuum to about 100 ml. The amount of vitamin B_{12} present in the concentrate was estimated by the method of Mitra *et al.*[3] using Beckmann spectrophotometer (G 2400) at 420 mμ wavelength.

Total Vitamin B_{12}.—The liver homogenate (100 g.) was dried first at 100°C. and then heated for 3 hours at 300°C. The total amount of vitamin B_{12} present in the dried mass was estimated by the method of Mitra *et al.*[3] For recovery test 0.20 mg./kg. of pure vitamin B_{12} was added to the homogenate before drying.

TABLE 1.—TOTAL AND EXTRACTABLE VITAMIN B_{12} IN THE LIVERS.

Animal	No. of Samples	Total Vit. B_{12} mg./kg.	Extractable Vit. B_{12} mg./kg.
Cow ..	5	0.72	0.60
Buffalo ..	6	1.00	0.80
Sheep ..	6	1.54	1.34
Goat ..	5	1.75	1.50
Rabbit ..	16	1.05	0.70
Chicken ..	10	—	0.64

Results

The results in Table 1 show that a substantial amount of vitamin B_{12} was left in the residue, after extraction of the liver homogenate with hot water. Out of a total of 0.720 mg./kg. of vitamin B_{12} present in cow liver, 83.3% was extracted. The percentage extractability of vitamin B_{12} in case of buffalo, sheep, goat and rabbit was 86.0%, 86.9%, 85.7% and 66.75% respectively. This indicated that 13-33.3% of the total vitamin B_{12} was not extracted by this method.

The results in case of beef liver (Table 1) were almost identical with the findings of Scheid and Schweigert.[1,4] However, vitamin B_{12} contents in the case of sheep and goat were much higher. The difference in the results seems to be due to the food and climatic conditions under which the animals were reared. Sheid *et al.*[5] and Sharif and Ahmad[6] reported a change in vitamin B_{12} contents of the liver of the animal with a change in the food and climatic conditions.

On the basis of these results, it is concluded that the sheep or goat livers are a better source of total as well as extractable vitamin B_{12}.

References

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