ANTIBIOTIC PROPERTIES OF LIVER-PROTEIN HYDROLYSATE

GOAT being the more common animal used for meat in India, most liver extracts in this country are naturally made from this biological source.

The usual method of making liver extracts is by digesting the liver with papain. The concentrated aqueous filtrate is treated with strong alcohol upto 70% to give precipitate (No. I). The alcoholic solution is again concentrated in vacuum and further treated with strong alcohol bringing the mixture as before to 70% to obtain precipitate (II). Dried at 70° C. under vacuum, the peptone, originally white, oxidises to a brown mass, due probably to tyrosine .Precipitate (II), on drying to a constant weight, gave 14% nitrogen; solubility in water about 10%; pH of saturated solution was 4·5; nitrogen content 1·4%, representing 8·75% protein; amino-nitrogen, by formal titration, 0·6%. Qualitative tests for tyrosine, tryptophane, methionine and cystine were all positive. Active charcoal, "Norit K" adsorbed the dark colour, but the pale straw-coloured filtrate still indicated the presence of all the four amino acids mentioned above.

Precipitate (II) does not function as peptone for bacteriological purposes. A 3·6% solution of this liver-peptone, indicated anti-biotic properties. The 10% solution of liver-peptone of pH 4·5 was diluted and ammonia was added to give the concentrated solution a pH of 7·0, which was further diluted as indicated in Table I.

The solution, which had about 4% liver peptone after adsorption, was just resistant to natural infection by putrefying bacteria, whereas solutions containing 3% and less were not.

The colour adsorbed by charcoal, as measured with Lumetron, indicated 64% adsorption leaving 36% behind comparable with a solution containing 3·6% liver-peptone of Table I. The findings with colour adsorption, given in Table II, thus confirm the data presented as different strengths of peptone solution given in Table I.

TABLE I

Effect of diluting liver peptone solution on bacterial growth

Concentration of dry liver peptone	Visual turbidity	Smell after 4 days
10%	Nil	Normal
5%	,,	,,
4%	,,	,,
3%	Turbidity, bacteria present	Putrefaction after 24 hrs.
2%	,,	Worse
1%	,,	Worst

TABLE II

Effect of adsorbing the antibiotic factor of "Norit K"

"Norit K" added		Colour adsorbed in percentage	Putrifaction after 4 days
100 mg.	..	10	Nil
200 mg.	..	32	Nil
500 mg.	..	64	Nil
1 G.	..	83	Putrefaction after 24 hrs.
2 G.	..	97·6	,,
3 G.	..	98·5	,,
4 G.	..	99·8	,,
5 G.	..	100	,,

The antibiotic properties of protein hydrolysate appears to have been rarely recorded.[1] Tables I and II offer *in vitro* experiments explaining in part the mechanism of natural immunity.

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December 12, 1949.

1. Nutini and Lynch, *J. Pharm. Exp. Ther.*, **1947**, **90**, 313—through *Manuf. Chemist*, **18**, 565.

ERRATA

The following paragraph must be included on page 84, March 1950 issue of *Current Science*, at the end of the paper entitled "*Palana, Lignite* (? *eocene*), Bikaner," by A. R. Rao and K. P. Vimal, just before the last paragraph:—

"S. R. N. Rao and Misra (*Current Science*, Oct. 1949, p. 380) have already reported the occurrence of a *Botryococcus Brauni* (-like alga) in these lignites. The present note records for the first time the occurrence of various kinds of fossil pollen in the same meterial. A fuller account of the microfossils in these lignites, which are being studied further, will be published elsewhere."