

Table 1—Loss in weight and strength of Rajasthan teak due to exposure to fungus for 12 weeks

SPECIMEN	FUNGUS	PER CENT LOSS OF					
		Weight			Modulus of elasticity		
		Max.	Min.	Av.	Max.	Min.	Av.
Heart	<i>Polystictus versicolor</i>	20.6 (11)	0 (17, 20, 10)	8.2	76.5 (11)	18.18 (17)	40.5
Heart	118T Brown rotter	35.7 (10)	0 (14)	14.2	80.8 (10)	20.7 (22)	42.3
Sap	<i>Polystictus versicolor</i>	19.6 (17)	4.2 (14)	12.9	73.1 (14)	0.4	38.3
Sap	118T Brown rotter	66.1 (11)	15.5 (10)	36.9	100.0 (10, 11, 16)	100.0 (10, 11, 16)	100.0

Figures in brackets show the age of the trees from which samples were taken.

samples of sapwood tested, 15 remained sound and two were destroyed; two of the rest were slightly attacked while one was moderately attacked.

Our thanks are due to Dr B. K. Bakshi, Officer-in-Charge, Forest Pathology Branch for supplying the cultures of the fungi used in these experiments.

Proteins from Prawn Shell Waste

P. V. KAMASASTRI & P. V. PRABHU

Central Institute of Fisheries Technology, Ernakulam

A method for the preparation of high quality protein from prawn shell waste is described. The yield of the protein from the shell waste is 5-6 per cent and its pepsin digestibility is 97-98 per cent.

ANIMAL proteins and protein hydrolysates are highly valuable in human and animal nutrition. The need for high quality protein food in underdeveloped countries is receiving increasing attention from the various world agencies. Fish as a source of protein food is well known and its nutritional status has been elaborately studied. Mohanty and Roy¹, and Ambe and

Sohonic² studied the nutritive value of protein hydrolysates and proteins from sharks and skates. The various aspects of the supplementary foods containing fish flour has been recently studied³. Little, however, is known about the proteins from prawn shell waste. Nearly 10-15 lakh pounds of prawn shell waste are available from the freezing and canning factories in

the country. The waste contains roughly 30-40 per cent of protein. A method to recover the proteins from the waste materials and the composition of the recovered product are reported in this note.

Fresh shell waste (250 g.) was blended with 250 ml. of 3 per cent sodium hydroxide for 1 min. and heated to 90°C. with stirring for 15 min. The material was filtered and the residue treated with an equal volume of 2 per cent sodium hydroxide. To the combined filtrates, dilute acetic acid (c. 100 ml.) was added until precipitation was complete. The precipitate was repeatedly washed with hot water to remove the soluble salts. The washed precipitate was refluxed with acetone for 10-15 min. to remove the pigments. The final product was dried in a current of hot air at 45°C. The yield of the product was 5-6 per cent of the raw material.

The total nitrogen content of the alkali extract ranged between 5.9 and 6.8 g./litre, of which the protein fraction contributed 1.8-2.2 g./litre and the amino nitrogen fraction 2.6-3.0 g./litre. The mother liquor obtained after the precipitation of the proteins contains 4.0-4.6 g. of nitrogen/litre and this can be concentrated and incorporated into poor nitrogenous diets.

Protein extracted from the shell waste is light pink in colour with no offensive odour and has the following characteristics: moisture, 7.7-8.2; protein content, 86-87; ash, 2.8-3.0 (with negligible insolubles); Ca, 0.38-0.51; P, 0.29-0.39; and digestibility, 97-98 per cent.

The authors⁴ have also worked out a method for the extraction of chitin from the prawn shell waste. The alkali waste from the above process can be successfully utilized for the production of proteins and the process can be made an integrated one to obtain chitin and protein products.

Acknowledgement

The authors express their sincere thanks to Dr A. N. Bose, Director of this Institute for his keen interest and guidance in the work.

References

1. MOHANTY, G. B. & ROY, A. B., *Science*, **121** (1955), 41.
2. AMBE, K. S. & SOHONIE, K., *Indian J. Fish.*, **4** (1957), 113-30.
3. SHURPALEKAR, S. R. *et al.*, *Food Sci.*, **11** (1962), 39-61.
4. KAMASASTRI, P. V. & PRABHU, P. V., *J. sci. industr. Res.*, **20D** (1961), 466.

