Table 1. Concentration of Mucopolysaccharides in the Skin of Normal Adult Rats

Animal (Exp. No. and sex)	Total conc. of mucopolysaccharides (μmg uronic acid/g dry skin)	Hyaluronic acid	Chondroitin sulphate	Heparin
		% of total uronic acid		
1 ♂	790	—	—	—
2 ♂	960	75	10	15
3 ♂	1,140	—	—	—
4 ♀	1,080	57	19	24
5 ♀	1,090	65	17	18
6 ♀	1,010	65	22	13
7 ♀	1,100	—	14	—
8 ♀	1,030	51	15	34
9 ♀	930	59	30	11
10 ♀	—	68	16	16
Average * S.D.	1,015 ± 108 *	63 ± 8	18 ± 6	19 ± 8

Table 2. Concentration of Mucopolysaccharides in the Skin of Adult Hypophysectomized Rats

Animal (Exp. No. and sex)	Total conc. of mucopolysaccharides (μmg uronic acid/g dry skin)	Hyaluronic acid	Chondroitin sulphate	Heparin
		% of total uronic acid		
11 ♂	900	69	18	13
12 ♂	750	68	17	15
13 ♂	1,000	55	20	25
14 ♂	920	59	20	21
15 ♂	1,010	57	23	20
16 ♀	—	42	35	23
17 ♀	930	63	26	11
18 ♀	800	52	36	12
19 ♀	1,060	74	12	14
20 ♀	1,060	56	33	11
21 ♀	870	55	34	11
Average	930 ± 95	59 ± 9	25 ± 8	16 ± 5
Values for pooled sample from 4 female rats, 2 months after hypophysectomy:	840	71	23	6

were about 3 to 5 months of age. Schiller and Dorfman[10] found the concentration of hyaluronic acid and chondroitin sulphate in the skin of 44-day-old rats to be much greater than that of mature rats.

The results of the present work suggest that the *in vivo* 'permeability' changes of dermal connective tissue which follow the ablation of the pituitary may not be a result of a change in the concentration of mucopolysaccharides, but could possibly result from a decrease in the degree of polymerization of the hyaluronic acid or other mucopolysaccharides as suggested earlier[6].

In conclusion, the present findings show that hypophysectomy does not affect the mucopolysaccharide content of skin, at least not in adult rats. The concentrations of the different mucopolysaccharides are not affected oven 2 months after the hypophysectomy.

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[1] Fabianek, J., Herp, A., Dau, P., and Pigman, W., *Abst. Eighth Interim Sci. Session Amer. Rhum. Assoc.*, Washington, D.C., 11 (Dec. 8–9, 1961).
[2] Fabianek, J., Herp, A., Calick, A., and Pigman, W., *Fed. Proc.*, **22**, 437 (1963).
[3] Pigman, W., *Bull. Soc. Chim. Biol.*, **45**, 185 (1963).
[4] Fabianek, J., Herp, A., and Pigman, W., *Arch. Intern. Physiol. Biochim.* (In the press).
[5] Fabianek, J., *et al.* (submitted for publication).
[6] Fabianek, J., *et al.* (submitted for publication).
[7] See for the composition of this diet: Fabianek, J., and Appleton, A. (submitted for publication).
[8] Schiller, S., Slover, G. A., and Dorfman, A., *J. Biol. Chem.*, **236**, 983 (1961).
[9] Dische, Z., *J. Biol. Chem.*, **167**, 189 (1947).
[10] Schiller, S., and Dorfman, A., *Nature*, **185**, 111 (1960).
[11] Schiller, S., and Dorfman, A., *Fed. Proc.*, **16**, 242 (1957).
[12] Schiller, S., *J. Chron. Dis.*, **16**, 291 (1963).

Effect of Propanol–Water Mixtures on the Reactivity of Wool Cystine

This communication shows that the concept of hydrophobic bonds in interactions of soluble proteins[1] can also be applied to water-insoluble fibrous proteins. It has been observed[2,3] that lanthionine formation in wool at 65° C with sodium hydrogen carbonate or borate is much faster in mixed solvents than in aqueous solutions. This effect was not explained by the authors. It was also found by Atkinson, Filson and Speakman[4,5] that it is more difficult to extend wool fibres in water alone than in saturated aqueous butanol. Now there is evidence that addition of organic solvents will tend to overcome the resistance of the hydrophobic interior of proteins to penetration by the aqueous solvent and thus may increase the reactivity of protein groups located in hydrophobic regions.

New experiments (Fig. 1) on the relationship of propanol concentration to the wool cystine degradation by 0·1 normal sodium carbonate at 45° C gave a maximum cystine reactivity in 60 per cent (v/v) aqueous propanol. In Fig. 1 the results given in ref. 3 for the same solvent are included to show the close similarity of the solvent effect.

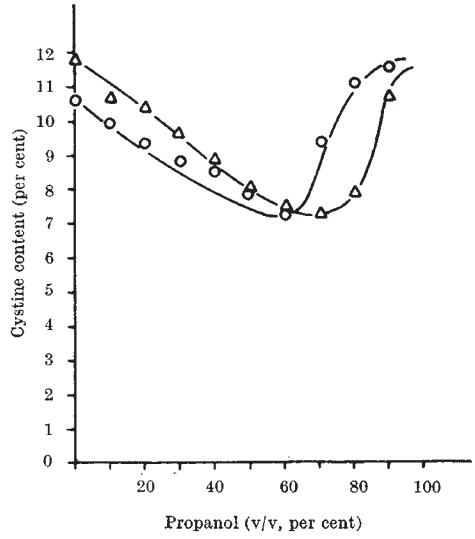

Fig. 1. Change in the cystine content in merino wool in 0·1 normal sodium carbonate: 45° C, 2 h (○) and in 0·5 molar borate solution: 65° C. 4 h (△) as a function of the concentration of propanol

The results suggest that the increased reactivity of wool cystine bonds in 10–80 per cent (v/v) aqueous propanol is best described as the consequence of a non-specific interaction of the solvent with the wool protein, resulting in the weakening of the hydrophobic interactions and the consequent exposure of wool cystine groups to the action of alkali.

Note added in proof. J. A. MacLaren (*Austral. J. Chem.*, **15**, 824; 1962) also regards wool as a protein linked by hydrophobic as well as hydrophilic interactions and found the extent of reduction of wool by thiols in aqueous alcohols increased.

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[1] Kauzmann, W., *Adv. Protein Chem.*, **14**, 1 (1959).
[2] Zahn, H., and Osterloh, F., *Makromol. Chem.*, **16**, 183 (1955).
[3] Zahn, H., and Wiedersich I., Deutsches Bundespatent, No. 1041216 (1.8.1955).
[4] Filson, A., and Speakman, J. B., *J. Soc. Dyers, Col.*, **74**, 762 (1958).
[5] Atkinson, J. C., Filson, A., and Speakman, J. B., *Nature*, **184**, 444 (1959).