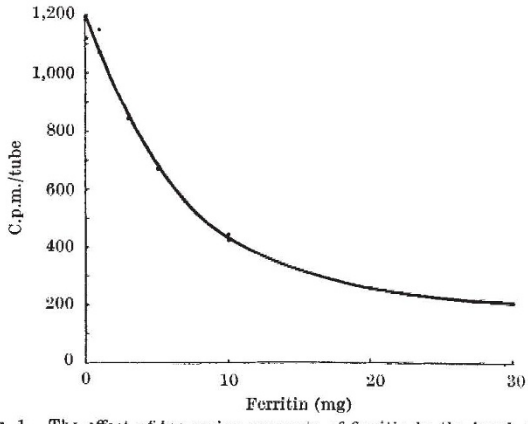

Fig. 1. The effect of increasing amounts of ferritin in the incubation mixture on the incorporation of valine-1-^{14}C

mined and adjusted for self-absorption by use of an internal standard. Incorporation was expressed in c.p.m. per incubation tube. Counts in duplicate tubes varied less than 5 per cent.

The amount of incorporated valine-1-^{14}C into the non-dialysable fraction was considered to be a measure of globin synthesis. The incorporation decreased in a hyperbolic manner with increasing concentrations of ferritin in the incubation mixture (Fig. 1). Ferritin had no effect when added to the mixture after incubation. The enzyme-*s*RNA fraction and the ribosome fraction were both rate-limiting at the concentrations employed. The inhibition by ferritin was completely abolished by doubling the concentration of glutathione (Table 1). This effect is possibly due to binding of ferritin iron by SH-groups. In the absence of ferritin a slight decrease in incorporated valine occurred following doubling of the concentration of the energy system. The mechanism of this effect is obscure as is the reason for the diminution of the inhibiting action of ferritin in the presence of doubled concentration of valine-1-^{14}C.

Pyridoxine, pyridoxal, or pyridoxamine in amounts up to 1 mg per tube neither enhanced globin synthesis in this system nor prevented the inhibition by ferritin. Deoxypyridoxine, a pyridoxine antimetabolite, was also ineffective.

The results of the described experiments suggest that ferritin inhibits globin synthesis. The fact that this inhibition is counteracted by excess glutathione in the incubation medium suggests that ferritin inactivates SH-enzymes required for the assembly of the polypeptide chains. It is possible that in thalassaemia the high ferritin content of the cytoplasm inhibits globin synthesis beyond the genetically determined limitation. Since in the incubation tube pyridoxine neither stimulated globin synthesis nor counteracted the effect of ferritin, it is likely that the slightly ameliorating effect of pyridoxine in this disease[2] is indirect through the action of pyridoxine on haem synthesis[1].

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BIOLOGY

*p*H of Grasses in Relation to Genera

IN 1964 Birch *et al.*[1] reported that the low *p*H values found in aqueous extracts of the grass *Setaria sphacelata* did not occur in similarly prepared extracts of another grass *Brachiaria ruziziensis* or in those of legumes. We have now made a *p*H survey of many grasses to find out if *S. sphacelata* is a unique species in this respect.

The majority of the grasses were sampled from the Kitale nursery (6,200 ft.) and the remainder from Molo (9,200 ft.) and Mtwapa on the coast. Five sub-families and their associated tribes were represented as follows: Bambusiformis (Bambuseae); Phragmitiformis (Stipeae and Oryzeae); Festuciformis (Festuceae, Hordeae and Phalarideae); Eragrostiformis (Eragrosteae, Chlorideae and Sporoboleae); and Paniciformis (Paniceae, Arundinelleae, Andropogoneae and Maydeae). As might be expected in a tropical country the Paniceae contained the largest number of species and the Andropogoneae the second largest. In all, 112 samples were examined for *p*H: the determination was made electrometrically after shaking 0·4 g of the dried and ground sample with 50 ml. water for 30 min.

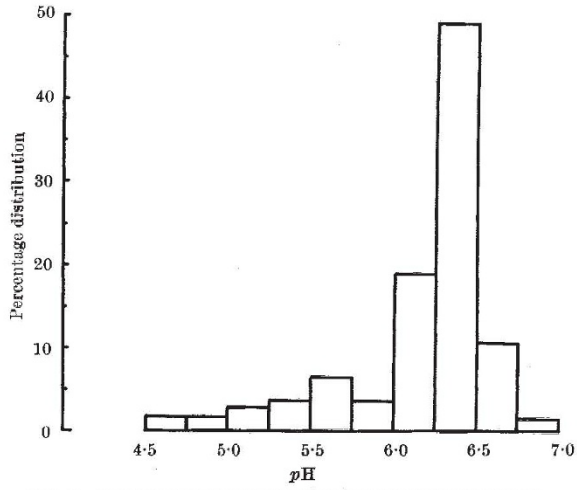

Fig. 1. Percentage distribution of *p*H in 112 samples of grass

As shown in Fig. 1, more than 80 per cent of the samples gave a *p*H value of more than 6; their mean value was 6·38. The remaining samples gave a mean *p*H value of 5·44 and they were composed as shown in Table 1.

Table 1. GRASSES WITH *p*H VALUES OF LESS THAN SIX

Genus	Species	No. of samples	*p*H range
Cenchrus	*C. ciliaris*	8	5·35–5·90
	C. setigerus	1	5·90
Pennisetum	*P. polystachyon*	1	4·75
	P. purpureum	1	5·70
	P. stramineum	1	5·15
Setaria	*S. sphacelata*	6	5·00–5·70
	S. splendida	2	4·75–5·00
	S. trinervia	1	5·45

It is apparent that *S. sphacelata* is not exceptional in its ability to produce low *p*H values in aqueous extracts, but it is remarkable that, of all the species examined, those which share this characteristic are confined to three closely related genera of the Paniceae.

Work is now in progress to see if the relationship between *p*H and ammonium accumulation as reported for *S. sphacelata* applies to these species.

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