In this connection it is interesting to mention the inhibition of the reaction by an excess of PP_i at a constant concentration of $ZnCl_2$ of 0.5 mM (Fig. 1, curve 2). It is not excluded that the inhibiting effect is connected with the accumulation of complexes of the metal–pyrophosphate type ($ZnPP_i^{2-}$ and Zn_2PP_i), as has been established previously for yeast pyrophosphatase [3].

Thus, summarizing the results on the activity of cotton alkaline pyrophosphatase in the presence of magnesium ions [2] and zinc ions, it can be stated that the affinity of metal ions for cotton pyrophosphatase, and also its complex with pyrophosphate, is higher for zinc ions than for magnesium ions.

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AMINO ACID COMPOSITION AND BIOLOGICAL VALUE OF PROTEINS OF THE WOODY VERDURE OF SEA BUCKTHORN

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In our preceding publication [1] it was reported that the woody verdure of the sea buckthorn is rich in protein substances (up to 27% on the absolutely dry substance), the overwhelming bulk of which (about 97%) consists of soluble proteins, the majority of which, in their turn, are represented by water-soluble and alkali-soluble proteins. The same paper gave information on the amino acid composition of the water-soluble protein fraction, on the basis of which indices of the biological value of the water-soluble proteins were based. The biological values of this protein fraction is comparable and even superior to the analogous indices of traditional fodder crops.

TABLE 1. Amino Acid Composition of the Alkali-Soluble Proteins of the Woody Verdure of the Sea Buckthorn

Amino acid	Amount, % on the total amino acids				
	June	July	August	September	October
Lysine	3,30	4,66	6.08	4,84	4,87
Histidine	3,85	3,79	4 67	3.61	4,31
Arginine	4,04	4,49	5.89	4,67	4.81
Cystine	1,89	2,02	2.43	1,15	2,04
Aspartic acid	15.91	11.43	11,37	13,93	6,43
Threonine	7,13	6,01	5,45	5,18	10,04
Serine	9,71	7,29	10,64	7,21	11.12
Glutamic acid	16,48	13.94	11.76	16,39	14,23
Proline	3 29	1.34	2.05	5,66	2,20
Glycine	7,11	6,73	7,39	8,03	8.67
Alanine	5,24	5,97	6,06	6,72	6,50
Valine	2,99	6,70	4,92	4,10	3,86
Methionine	0 50	0,15	0,25	0,25	0,21
Isoleucine	4,21	2.98	2,03	2.38	2,23
Leucine	7,12	14,65	12,09	8,44	9,60
Tyrosine	4,30	3.08	2.62	3,28	3,16
Phenylalanine	4,45	4,72	4.90	4.26	5,61
Sum of the essential amino acids	34,59	44,97	40,77	33,77	41,62

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TABLE 2. Biological Value and Amino Acid Score of the Alkali-Soluble Proteins of the Woody Verdure of the Sea Buckthorn

Essential amino acids	Amino acid score, % on the total amino acids				
	June	July	August	September	October
Lysine	69,09	84,73	110,55	88,00	88,55
Cystine + methionine	68,29	62,00	76,57	40,00	64,29
Threonine	178,25	150,25	136,25	127,00	251,00
Valine	59,80	134 00	98,40	82,00	77,20
Isoleucine	60,25	74,50	50,75	59,50	55,75
Leucine	101,71	209,29	172,71	120,60	137,14
Tyrosine + phenylalanine	145,83	130,00	125,33	125,70	146,17
BVP index	91,25	112,24	104,35	88,07	104,48

In the present communication we give the results of an amino acid analysis of the alkali-soluble protein of the woody verdure of the sea buckthorn (Table 1) and indices of the biological value of these proteins (BVP) calculated by the same methods as in [1].

The amino acid composition of the alkali-soluble proteins is largely similar to that of the water-soluble proteins. Characteristic for both groups of proteins is a predominance of monoamino bicarboxylic amino acids (aspartic and glutamic acid) over amino acids of basic nature (lysine, histidine, arginine). Both groups of proteins contain fairly small amounts of sulfur-containing amino acids (cystine and methionine).

The amino acid scores of the essential amino acids of the alkali-soluble proteins (Table 2) were calculated by the method recommended by the FAO in 1973 [2], and the BVP index by the procedure of Gruzdev et al. [3]. According to the BVP index, this group of proteins from the woody verdure of the sea buckthorn is superior not only to such fodder crops as alfalfa and clover [4], but also to the water-soluble proteins of the same woody verdure [1], exceeding the 100% level in some months.

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ISOLATION OF A TRYPSIN INHIBITOR FROM COTTON SEEDS

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At the present time, great interest is being aroused by the question of the specific role of protease inhibitors in plant–pathogen interaction.

From healthy seeds of a cotton plant of the variety Tashkent 1 we have isolated a protein inhibitor which suppresses the activity of trypsin and protease C isolated for the same cotton seeds [1]. There are reports that some inhibitors isolated from plants suppress the activity of the proteases of microorganisms, and it is therefore possible that the plant protease inhibitors play an important role in their protection from phytopathogenic microorganisms [2]. In agreement with this, a positive correlation has been observed between the activity of inhibitors and the resistance of plants to fungal diseases. In an investigation of the proteolytic activity and amount of inhibitors in wheat it has been established that in a susceptible variety the activity of the enzyme was twice as great as in a resistant variety [3].

We have made a comparative study of the activities of the proteases of the seeds of a healthy and a wilt-affected plant and the relative resistance to wilt attack of the varieties Tashkent-1 and Tashkent-2. We studied the dependence of the change

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