ON THE GLOBULIN-ALBUMIN RATIO OF POTATO PROTEIN

by

J. HOFSTEE

Experimental Station for the Industrial Utilisation of the Potato, Groningen (Netherlands)

In a recent paper[1] published in this journal E. H. GROOT *et al.* were dealing with the problem of the homogeneity of the potato protein. It was stated that the protein of the potato consists of two fractions viz., one portion that is to be regarded as a globulin and the other part as an albumin. The ratio of the amounts of globulin and albumin present was said to be about 7 : 3. I should like to mention results of my own work on this subject, which seem to agree well with their statements. In differentiating between a globulin and an albumin most emphasis is layed upon their difference in solubility, the globulins being insoluble and the albumins being soluble in water. See the proposal on classifying proteins of the "Committee on Protein Nomenclature"[2]. In several experiments this ratio of insoluble to total protein was estimated.

In a number of juices of different strains of potato the total protein content was estimated by coagulation in the presence of trichloroacetic acid. Moreover the maximum quantity of protein which was precipitated by acid was found by plotting the amounts of protein which precipitated at different p_H (ranging from 1.5 to 8.5) against p_H and taking the maximum of the curve. In this way we obtained the following results

Number of the sample	Ratio protein precipitated by acid: total protein
1	0.72
2	0.74
3	0.84
4	0.64
5	0.60
40	0.80

The average of this ratio: 0.72, agrees well with that of GROOT *et al.*, viz. 0.71.

KIESEL and his collaborators[3] dialysed potato juice. Some protein was precipitated. The ratio of the amount of this insoluble protein and the total amount of protein present in the collodium bag was found to be 0.71. In repeating this experiment we found a ratio of 0.68.

In a third experiment a highly purified sample of total potato protein, which contained no phosphate and had a nitrogen content of nearly 16.25% (the method of preparation will be described elsewhere) was analysed. It was demonstrated that 72% of the total amount of protein was insoluble in water. So we find a ratio of 0.72 for the insoluble protein. The constancy of this number is indeed surprising, the more because it was obtained with different strains of potatoes, at different times and by different procedures.

References p. 264.

SUMMARY

Evidence is added to the statement of E. H. GROOT *et al.*[1] about the constancy of the globulin/albumin ratio of potato protein.

RÉSUMÉ

Quelques données ont été ajoutées sur la proportion constante de globuline et d'albumine dans la protéine de pomme de terre, donnée par E. H. GROOT *et al.*[1].

ZUSAMMENFASSUNG

Die Behauptung von E. H. GROOT *et al.*[1], nach welcher das Verhältnis von Globulin und Eiweissstoff im Kartoffelprotein konstant ist, wird durch neue Angaben bekräftigt.

REFERENCES

1 E. H. GROOT, L. W. JANSEN, A. KENTIE, AND H. J. L. TRAP, *Biochim. Biophys. Acta*, 1 (1947) 410.
2 Committee on Protein Nomenclature, *J. biol. Chem.*, 1 (1908) 142.
3 A. KIESEL, A. BELOZERSKY, PAGATOW, N. BIWSCHICH, AND M. PAWLOWA, *Z. Physiol. Chem.*, 226 (1924) 73.

Received May 19th, 1948