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The significant findings of the present investigation on seed globulins of pigeon pea can be summarised as follows:

Maximum dry matter and nitrogen accumulated in the seed during the period between 14 and 28 days after flowering (DAF). Nitrogen percentage in the pod cover declined from 4% at 7 DAF to about 0.6% at 42 DAF, while in the pod bearing leaf it remained unchanged. Maximum amount of free amino acid in pod cover and seed were on 21 and 28 days after flowering, the latter coinciding with the maximum rate of protein synthesis.

The proteins from mature seeds were least soluble between pH 3 to 5 at low ionic strength. However, inclusion of salt in the extraction medium increased the protein solubility in this pH range from about 15% to about 60% of the total nitrogen in the seed meal.

Extraction of the seed meal at acidic and alkaline pH solubilises different types of proteins. Only vicilin protein could be extracted at acidic pH (pH 3.5). With this method it is now very easy to prepare large quantities of vicilin from pigeon pea seed meal in a short time.

The globulin protein was purified and separated into three fractions: legumin, vicilin and χ-protein. The legumin
and vicilin of pigeon pea correspond to legumin and vicilin of other legume crops. The \( \gamma \)-protein of pigeon pea resembles the conglutin-\( \gamma \) of *Lupinus* in its high sulphur amino acid content. The different purified fractions have been characterised with respect to their size, number of subunits and amino acid composition. The molecular weight of legumin holoprotein was estimated by SDS-gel electrophoresis to be about 360,000. On reduction legumin showed seven subunits on a dodecyl sulphate polyacrylamide gel and the molecular weight ranged from 70,700 to 23,000.

The vicilin holoprotein had a molecular weight of 187,000 and was made up of two subunits of molecular weight 72,000 and 57,000. There were no disulphide linkages between the vicilin subunits.

The \( \gamma \)-protein had a molecular weight of about 52,400 and was made up of two subunits of molecular weight 31,900 and 20,100 that were held together by disulphide linkages. Amino acid composition data revealed that the \( \gamma \)-protein was relatively rich in sulphur amino acids as compared to either legumin or vicilin.

It was established that \( \gamma \)-protein was synthesised in developing seeds after 21 days of flowering. Variability in the amount of \( \gamma \)-protein was observed in the different accession lines of pigeon pea. Some accessions were found to have a
\( \gamma \)-protein equivalent although these lines did not show any cross reaction with the antibodies raised against \( \gamma \)-protein from cultivar T-21.

The rocket immunoelectrophoretic technique has been standardised for determining the relative amount of \( \gamma \)-protein from crude seed protein extracts. This method can now be employed in a breeding programme for selecting lines with increased amount of \( \gamma \)-protein in pigeon pea.