ELECTROPHORETIC EVIDENCE[1/] OF A SPECIFIC SEED ALBUMIN OF PISUM FULVUM

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In previous investigations of electrophoretic (EP) seed albumin patterns in Pisum, nine such EP-patterns, designated I to IX, were distinguished. The patterns were formed by different combinations of several well defined protein bands, designated a - f. Albumins corresponding to the characteristic bands, called "specific albumins", were recovered in the sephadex fraction with MW about 40,000 (the S2 fraction). Only in the case of the Pisum form representing EP III, i.e., line WL-1490 called P.cinereum, was the characteristic band b not observed on an electropherogram of the S2 fraction (1, 2, 3).

The recently reported side-by-side slab gel electroophoresis of the S2 fractions, performed for the Pisum forms representing EP I-V and VII-IX (Pisum forms with EP VI seem to have no S2 fraction) revealed a variation in electrophoretic mobility of apparently homologous bands. Thus, the b band of EP V from P. fulvum WL-1256 migrated faster than the b band from P. sativum WL-110, representing the commonly occurring EP I. The band b from line WL-1256 was then called b_1 and the b band from line WL-110 was designated b_2 The band b from P. sativum VIR 1987 with EP VII, a pattern found in a number of accessions originating from Transcaucasia and obtained from VIR, corresponded to band b_2. These observations raised the question whether or not band b_1 is characteristic of P. fulvum.

In this work five accessions of P. fulvum and 152 accessions representing other Pisum forms were analyzed. Of these other forms 143 accessions represented P. sativum, five accessions P. elatius and four accessions P. humile, having b-containing EP patterns EP I and EP VII.

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The material analyzed was obtained mainly from the Pisum Gene Bank at Weibullsholm and from N. I. Vavilov All-Union Research Institute of Plant Industry, VIR, Leningrad (2, 3). For every Pisum accession one seed (the cotyledons) was analyzed. Crude protein extracts with large proportions of albumins were subjected to electrophoresis on slab gels as described in a previous paper (3).

The results indicated that of the Pisum accession examined only Pisum fulvum accessions have the b_1 band while the other accessions have band b_2. The b_1 band was observed in four P. fulvum accessions having the EP V characteristics of the taxon and also in one P. fulvum accession having a deviating EP pattern ("Population 1" wild-growing in Israel). Thus the b_1 band seems verily to be characteristic of P. fulvum. Fig. 1 shows the electrophoretic patterns of the Pisum fulvum accessions and of some accessions representing other taxa.

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2. Przybylska, J., S. Blixt, J. Hurich, and Z. Zimniak-Przybylska. 1977. Genetica Polonica 18:27-38.
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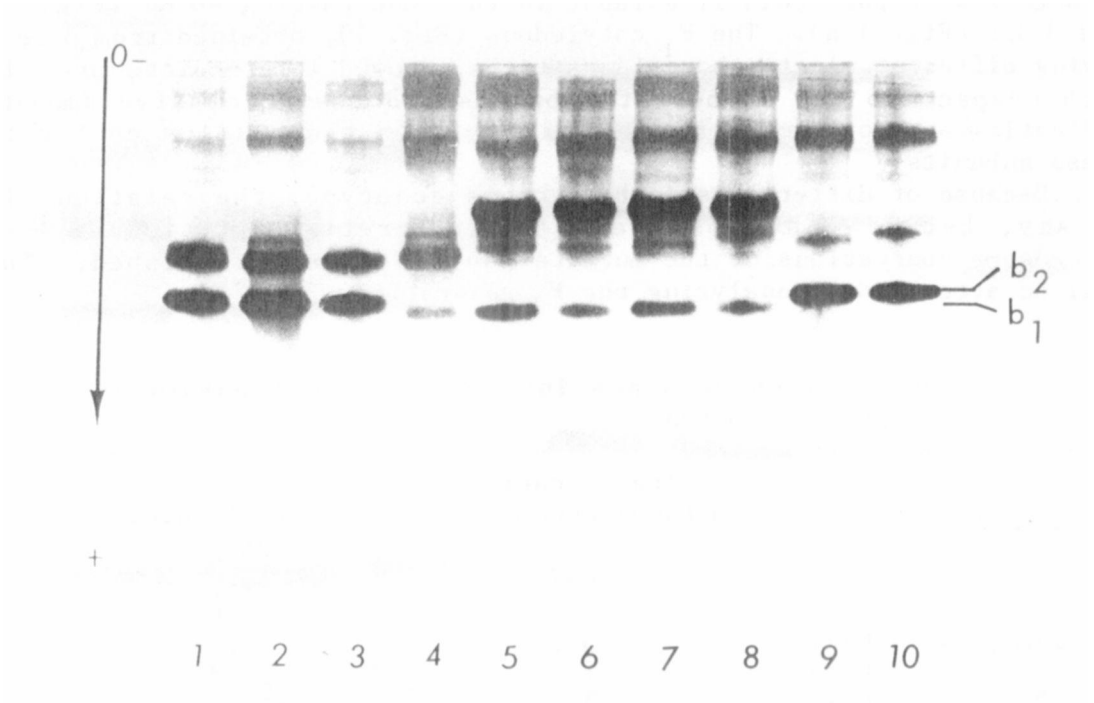

Fig. 1. Slab gel showing that the b band (b_1) in P. fulvum accessions (4-8) migrates faster than the b band (b_2) in other Pisum taxa (1-3, 9-10). The patterns shown were produced by the following accessions: (1) - WL-110, P. sativum (EP 1); (2) - WL-226, P. elatius (EP I); (3) - WL-1951, P. sativum (EP I); (4) - P. fulvum population wild-growing in Israel, obtained from the Hebrew University of Jerusalem and called "Population 1" (EP deviating); (5) - VIR 3397, P. fulvum (EP V); (6) - Jl 224a, P. fulvum (EP V); (7) - Jl 224b, P. fulvum (EP V); (8) - WL-1256, P. fulvum (EP V); (9) VIR 1987, P. sativum (EP VII); (10) - VIR 2381, P. sativum (EP VII).