TABLE 1. Amounts of Amino Acids in Flower Pollens (pollen loads), mg/g

Amino acid	Red clover	Charlock	Cultivated apple	Common dandelion	Tall buttercup	Garden pea
Glutamic	34,72±1,20	37,70±1,35	36,77±1,40	21,04±1,01	23,58±1,15	39,01±1,50
Aspartic	27,52±1,18	31,18±1,21	27,21±1,11	16,57±0,95	18,12±1,01	35,85±1,30
Leucine	22,28±1,02	22,82±1,02	23,30±1,10	14,93±0,86	15,19±0,53	22,89±1,03
Alanine	15,94±0,83	17,84±0,82	17,83±0,79	12,96±0,67	11,19±0,52	16,05±0,90
Serine	14,09±0,80	13,08±0,69	15,26±0,85	10,08±0,51	9,91±0,45	18,31±0,81
Glycine	13,31±0,71	16,22±0,92	14,25±0,81	12,16±0,61	10,01±0,50	13,56±0,73
Threonine	14,16±0,81	17,37±0,75	13,94±0,74	8,34±0,32	9,74±0,42	14,48±0,84
Valine	13,83±0,76	13,35±0,73	13,97±0,78	8,37±0,32	9,32±0,41	15,64±0,85
Isoleucine	13,52±0,73	12,92±0,52	13,13±0,71	8,48±0,35	9,01±0,40	14,67±0,84
Proline	13,05±0,70	14,63±0,84	12,55±0,63	10,35±0,53	7,98±0,24	12,74±0,65
Phenylalanine	12,77±0,62	14,23±0,71	12,82±0,52	7,91±0,26	8,71±0,36	13,45±0,74
Tyrosine	7,86±0,25	8,18±0,31	8,67±0,35	4,77±0,16	4,91±0,16	8,14±0,31
Lysine	6,29±0,18	5,19±0,17	5,51±0,17	3,89±0,15	3,32±0,13	4,92±0,16
Histidine	6,21±0,18	3,28±0,13	6,66±0,18	3,19±0,13	2,80±0,12	6,00±0,17
Arginine	4,86±0,16	0,97±0,05	2,27±0,12	2,30±0,10	0,88±0,04	8,05±0,30

phenylalanine, and, after them, tyrosine, lysine, and histidine. Arginine was present in the smallest amount, with the exception of the pea pollen, which contained 8.05 mg/g of it.

The results obtained show the uniformity of the qualitative compositions of the amino acids. The variations in their amounts in the pollen loads from various species were inconsiderable, which is apparently due to the vital needs of the plants.

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ISOLATION AND CHARACTERIZATION OF A ZEIN POLYPEPTIDE

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The elucidation of the nature of the components responsible for the polymorphism of zein is of interest for the identification of self-pollinated lines of maize [1] and for establishing the interrelationship of the biosynthesis of the zein polypeptides [2]. We used gel filtration [3] and preparative electrophoresis [1, 2, 4] to isolate the zein subfractions. There is information on the isolation of the subfractions of zein by preparative isoelectric focusing using sorbitol [5, 6] or Ultrodex [7] with the aim of a comparative investigation of their amino acid compositions. However, these results do not permit an adequate characterization of the nature of the components of zein.

In the present paper we discuss the isolation of a zein polypeptide by preparative isoelectric focusing in Ultrodex.

A total zein preparation was isolated by extraction with 70% ethanol from maize flour (line A 204 +++) that had been defatted with petroleum ether. For the separation of the protein preparation we used dialysis, centrifugation, and freeze-drying. Isoelectric focusing was performed in Ultrodex on a 12 × 26 cm horizontal plate in a Multiphore instrument (Sweden) in the pH range of 5-9 by a modified procedure [7]. The amount of protein deposited was 200 mg. Focusing was carried out for 16 h at a power of the electric

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current of 7.5 W (initial conditions – 500 V, 14 mA; final conditions – 1100 V, 6.5 mA). The paper replica method [8] was used to locate the proteins. After the completion of the process the gel was divided into 38 sections and the proteins were eluted with 8 M urea solution. A component with pI 6.1 was readily detected visually, because of its high protein content, in the form of a semitransparent zone. Gradient SDS electrophoresis in 12.5-17.5% polyacrylamide gel using Laemmli's system [9] in the presence of 2-mercaptoethanol showed that the polypeptide that had been isolated was a monomer with a molecular weight of 21,600. Threonine was found as the NH_2-terminal amino acid. The UV spectrum of the polypeptide in 0.5% sodium dodecyl sulfate solution was characterized by an adsorption maximum at 276 nm. The amino acid composition of the protein was typical for zein polypeptides.

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REVERSIBLE IMMOBILIZATION OF OLIGONUCLEOTIDES ON NITROBENZYL-CONTAINING SUPPORTS

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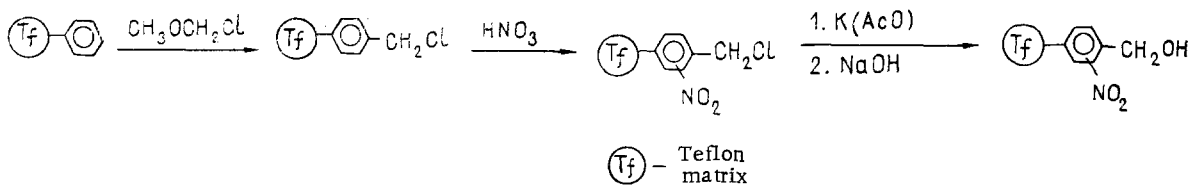
Oligonucleotides immobilized on insoluble supports are being used successfully for the isolation of individual nucleic acids [1], for the study of the interaction between nucleic acids [2], and for the genetic analysis of specific DNA sequences [3].

For the reversible immobilization of oligonucleotides we have used a polymeric support containing a O-nitrobenzyl anchoring group. A unique property of the O-nitrobenzyl group is the possibility of its elimination in an aqueous or organic medium on mild UV irradiation [4, 5]. As the polymeric matrix we used the modified polystyrene grafted onto the surface of inert polytetrafluoroethylene (Teflon) developed previously, which has well recommended itself. Below we give the scheme of obtaining a Teflon polymer of the grafted type containing O-nitrobenzyl groups. Each stage of the reaction was monitored by IR spectrophotometry. The use of the O-nitrobenzyl group for anchoring enables immobilization to be effected through the terminal phosphate groups of oligonucleotides while the functional groups of the heterocycles remain free.



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