Proline	0.19	0.27
Methionine	0.40	0.15
Glutamic acid	0.27	0.22
Phenylalanine	0.49	0.16
Isoleucine	0.46	0.63
Histidine*	0.06	0.08
Lysine*	0.09	0.06
Arginine*	0.08	0.12

A mixture of alanine, threonine, serine, and aspartic acid, which it is impossible to separate in a silica gel–gypsum layer, is clearly separated in a kaolin–starch layer. The separation of a mixture of leucine, methionine, and valine in a layer of silica gel–gypsum is difficult because of the close values of their R_f values, but in a kaolin–starch layer their separation takes place very clearly.

Thus, the readily available and cheap Angren kaolin can fully replace the industrial adsorbents used for the separation of amino acids by the TLC method, and this all the more because the activation of kaolin is not particularly difficult.

LITERATURE CITED

1. Yu. Kirkhner, Thin-Layer Chromatography [in Russian], Moscow, Vols. 1 and 2 (1981).
2. A. A. Akhrem and A. I. Kuznetsova, Thin-Layer Chromatography [in Russian], Moscow (1964).
3. B. V. Aivazov, Introduction to Chromatography [in Russian], Moscow (1983).

USE OF BIOSPECIFIC ADSORBENTS WITH IMMOBILIZED POLYPEPTIDE FRAGMENTS OF THE COLLAGEN MOLECULE FOR AFFINITY CHROMATOGRAPHY OF FIBRONECTIN

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We have synthesized biospecific adsorbents with the α1- and α2-chains and β_{11}- and B_{12}-components of type I collagen and also with the α1CB7 and α1CB8 cyanogen bromide peptides of collagen immobilized on Sepharose. The study of the properties of this type of adsorbents is of interest both for increasing the efficiency of the affinity chromatography of fibronectin from the point of view of the capacity of the sorbents and the purity of the desired preparation and also for investigating the mechanisms of the biospecific interaction of collagen with biopolymers having an affinity for collagen (fibronectin, collagenase, etc.).

Collagen was separated into the α-chains and β-components by the known procedure [1] of the ion-exchange chromatography of previously denatured rat skin collagen on cellulose CM-52. To obtain the α1CB7 and α1CB8 cyanogen bromide peptides of collagen, fragmentation of the fraction containing the α1-chain and the β_{11}-fragment of collagen was performed by means of cyanogen bromide in 70% formic acid followed by ion-exchange chromatography on cellulose CM-52 [2]. The above-mentioned polypeptide fragments of the collagen molecule were immobilized on cyanogen–bromide-activated Sepharose by a standard procedure [3]. The amounts of immobilized peptides in the absorbents obtained were determined from the amounts of hydroxyproline in aliquots of the adsorbents hydrolyzed with 6 N HCl; they ranged between 0.6 and 1.7 mg/ml of gel.

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The capacity of the adsorbents obtained for fibronectin was determined in the chromatography of fibronectin from human blood plasma under saturation conditions [4]. It was established that the adsorbents with the α-chains and with the α1CB7 peptide possessed a higher capacity (2.0-2.5 mg/mg of immobilized ligand) than a commercial "gelatin–Sepharose" adsorbent (~1 mg/mg) or the sorbents with the β-components (1.0-1.3 mg/mg). The adsorbent with the α1CB8 peptide, which contains no fibronectin-binding section, proved to be ineffective for the isolation of fibronectin. It must be mentioned that the preparations of fibronectin obtained on adsorbents with the α-chains or the α1CB7 peptide were characterized by a higher degree of purity (>95%) than the fibronectin obtained on "gelatin–Sepharose."

The availability of fibronectin for biochemical and medical investigations will promote the further study of the important role of this protein in the norm and in pathological states of the organism [5].

Sorbents with immobilized α-chains or with the α1CB7 peptide are promising for the preparative isolation of fibronectin from various sources. At the Khar'kov Enterprise for the Production of Bacterial Preparations the industrial approval of a method of isolating fibronectin from human blood plasma on adsorbents with the α-chains of collagen, including those based on supports resistant to microbial and enzymatic attack has been completed.

LITERATURE CITED

1. A. Piez, E. Eignen, and M. Lewis, Biochemistry, 2, 58 (1963).
2. E. Chung, E. M. Keele, and E. J. Miller, Biochemistry, 13, 3459 (1974).
3. B. A. Klyashchitskii, I. V. Mezhova, and V. I. Shvets, Usp. Biol. Khim., 27, 187 (1987).
4. V. Kh. Mitina, N. A. Frantsuzova, N. G. Kutsenko, N. N. Zolotov, and B. A. Klyashchitskii, Bioorg. Khim., 11, 173 (1985).
5. A. D'Arclenne, J. Pathol., 142, 235 (1984).

AMINO ACID COMPOSITIONS OF POLLENS OF SOME HONEY-YIELDING PLANTS. II

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Previously, using paper chromatography, we have described the composition of the free amino acids and those forming components of the proteins of pollens (pollen pellets) gathered by bees from eight species of plants [1].

In the present communication we give the results of an analyses of pollen pellets from Trifolium pratense (red clover), Sinapis arvensis (charlock), Malus domestica Borkh (cultivated apple), Taraxacum officinale Wigg (common dandelion), Ranunculus acer L. (tall buttercup), and Pisum sativum L. (garden pea) gathered by bees on the territory of the Lithuanian SSR.

Amino acids were determined with the aid of a KLA-3V automatic analyzer (Hitachi) using ion-exchange chromatography [2]. The proteins of the pollen loads were subjected to acid hydrolysis with 6 N HCl in sealed tubes at 105°C for 24 h. To analyze amino acids of basic character we used resin No. 2611, and for acidic and neutral representatives resin No. 2612 (Japan).

In the samples investigated 15 amino acids were detected. The figures given in Table 1 show that glutamic and aspartic acids predominated, and these were followed by leucine and then the amino acids alanine, serine, glycine, threonine, valine, isoleucine, proline, and

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