fractions can be used to obtain immunosorbents for the one-stage isolation of α-latrotoxin from whole venom and also, probably, for the treatment of bites by spiders of the genus Latrodectus.

LITERATURE CITED

1. V. M. Rusanov and L. I. Skobelev, The Fractionation of Plasma Proteins and the Production of Blood Preparations [in Russian], Meditsina, Moscow (1983).
2. H. Friemel and J. Brock, Grundlagen der Immunologie (3rd edition. VEB Akademie Verlag, Berlin (1976) [Russian translation], Mir, Moscow, 1979), p. 298.
3. A. E. Gurvich and E. V. Lekhttsind, Immunol. Eksp. Biol. Med., No. 12, 752 (1981).
4. A. Forsgren and J. Sjöquist, Immunol. [sic], 97, 822 (1966).
5. B. Z. Dalimov, S. K. Kasimov, and S. I. Salikhov, Symposium on a Structure, Biosynthesis and Functions of the Molecular Elements of the Immune System, Abstracts, Pushchino (1987), p. 98.
6. A. E. Gurvich, Biokhimiya, No. 5, 550 (1955).

SYNTHESIS OF cis-DODEC-7-EN-1-OL [1-^{14}C]ACETATE — ONE OF THE MAIN COMPONENTS OF THE SEX PHEROMONE OF Agrotis segetum — AND A STUDY OF ITS VOLATILITY FROM RUBBER DISPENSERS

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The main components of the pheromone of the population of the turnip moth Agrotis segetum distributed in the south-western regions of the USSR are dec-cis-5-en-1-yl acetate, dodec-cis-7-en-1-yl acetate, and tetradec-cis-9-en-1-el acetate. Compositions containing these components possessed the greatest attractiveness for males of the pest when field trials were performed [1].

To create effective preparative forms of the sex pheromone it is necessary to determine the rate of their liberation form artificial evaporators. Among known methods, the most sensitive and accurate is the radiometric method in which ^{14}C-labeled pheromones are used [2].

We have performed the synthesis of dodec-cis-7-en-1-yl acetate labeled with carbon-14 and have studied the rate and duration of its evaporation form rubber dispensers under field conditions. The initial dodec-cis-7-en-1-ol was obtained from hex-1-yne and 6-bromohexan-1-ol by published methods [3, 4], and its physicochemical constants and spectral characteristics (IR and PMR spectra) corresponded to those given in the literature [5]. The product obtained was acetylated with [1-^{14}C]acetic anhydride (540 MBq/mmole) in pyridine at room temperature for 22 h.

$$C_4H_9CH{=}CH(CH_2)_6OH \rightarrow C_4H_9CH{=}CH(CH_2)_6O^{14}C(=O)CH_3 .$$

After the usual working up and column chromatography (SiO_2; n-hexane—Et_2O (1:1)), the radiochemical yield of the [1-^{14}C]acetate amounted to 47.7%; its molar activity was 492 MBq/mmole and its radiochemical purity 94%. The labeled preparation (12 mg) was dissolved in 4 ml of hexane and deposited in 10-μl portions in dispensers (sections of medical red rubber tubing 15 mm long with an internal diameter of 5 mm and a wall thickness of 1.5 mm). The dispensers were placed in pheromone traps set up in an experimental field, and 10 of them

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were taken every 5 days, placed in counting bottles with ZhS-8, and incubated for 25 min, after which radioactivity was determined. The relative error of the determinations did not exceed 4%. It was found that the rate of evaporation of the pheromone from a rubber dispenser was not constant. In the first five days 60-65% of the substance deposited evaporated, and in the following days there was a slow uniform liberation of the pheromone with time. After 60 days, not more than 5% of the amount deposited remained. The results obtained agree well with practical results according to which dispensers retained their attractiveness for 45-50 days.

LITERATURE CITED

1. B. G. Kovalev, T. Dzhumakulov, S. F. Nedopekina, and A. A. Abduvakhabov, Dok. Akad. Nauk SSSR, 284, 1373 (1985).
2. R. J. Kuhr, A. Comeau, and W. L. Roelofs, Ehviron. Entomol., 1, 625 (1972).
3. D. E. Ames, A. N. Covell, and T. G. Goodburn, J. Chem. Soc., 5889 (1963).
4. C. A. Brown and V. K. Ahuja, J. Chem. Soc., Chem. Commun., 553 (1973).
5. R. Rossi, A. Carpita, L. Gaudenzi, and M. G. Quirigi, Gazz. Chim. Ital., 110, 237 (1980).

USE OF EDIAP MASS SPECTROMETRY FOR DETERMINING COMPOSITION OF PRODUCTS OBTAINED IN PERIODATE OXIDATION OF SUCROSE

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The possibility has been demonstrated of using EDIAP mass spectrometry for the express determination of the composition of the products obtained in the periodate oxidation of sucrose and its subsequent reduction with $NaBH_4$. It has been shown that the method permits the amount of oxidized glycol and triol groupings to be determined and can therefore be used successfully to establish the structure of carbohydrates. The method also permits the recording directly in the reaction mixture of the presence of the equilibrium forms produced in the interaction of aldehyde groups with molecules of the solvent or of hydroxylamine. Analysis with the aid of EDIAP mass spectrometry requires 100-200 picomoles, calculated on the initial amount of sucrose. The time of analysis is 5 min. The mass spectra contain only the peaks of quasimolecular ions of the type of $[M + Na]^+$.

The analysis of a mixture of oligosaccharides is a fairly complex and laborious task which is solved by the successive use of various methods of fractionation and chemical modification, and the identification of the comopunds isolated with the aid of physicochemical methods [1]. It may be assumed that the use of a more universal mass-spectrometric method would permit the identification of such compounds without their fractionation and chemical modification which would considerably facilitate the solution of the problem.

Traditional methods of mass-spectrometric analysis and the determination of the structures of carbohydrates using electron-impact ionization or chemical ionization are used after their conversion into volatile forms: methyl or trimethylsilyl ethers or cyclic acetals [1]. The necessity for the preliminary modification of oligosaccharides and the considerable fragmentation during the ionization process limits the use of these methods and makes them unsuitable for the analysis of mixtures of these compounds.

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