

of it is distributed unsymmetrically over the extreme positions of the acylglycerols with a preference for sn-1.

The bulk of the oleic - the 18:1(9) - acid is distributed almost uniformly between the sn-1 and sn-2 positions, and only 24% of its total amount is bound in the sn-3 position. The distribution of the 18:1(6) acid is distinguished by a far higher specificity in relation to the extreme positions. Only 13% of the 18:1(6) acid esterifies the secondary hydroxyl of sn-glycerol, and more than half of its total amount is bound in the sn-3 position.

Thus, petroselinic acid is distributed nonuniformly over all the positions of sn-glycerol with a preference for the sn-3 position.

LITERATURE CITED

1. R. Kleiman and G. F. Spencer, *J. Am. Oil. Chem. Soc.*, **59**, 29 (1982).
2. S. D. Gusakova, I. I. Vinokurov, and A. U. Umarov, *Khim. Prir. Soedin.*, 288 (1981).
3. S. G. Yunusova, S. D. Gusakova, and A. U. Umarov, *Khim. Prir. Soedin.*, 430 (1982).

PHOSPHORYLATION OF DIACYLGLYCEROLS

T. V. Khomova, S. D. Gusakova,
and A. I. Glushenkova

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The value of fats and their resistance to oxidation on storage are determined to a large extent by how the fatty acids are distributed between the sn-1, sn-2, and sn-3 positions of the triacylglycerols (TAGs).

The set of acids in each of three positions of the TAGs are determined by stereospecific analysis by Brocherhoff's method [1]. The method includes several stages: the production of racemic mixture of sn-1,2- and sn-2,3-diacylglycerols (DAGs) by pancreatic hydrolysis or with the aid of a Grignard reagent, phosphorylation of the mixture of DAGs in order to obtain the total L- and D-phosphatidylphenols, and the lipolysis of this mixture with phospholipase A.

Phenyl phosphorodichloridate is the most frequently used phosphorylating agent for DAGs. As a rule, the reaction is performed at room temperature for a time ranging from 30 min [2, 3] to 14-20 h [1, 4].

Phosphorylation under these conditions is accompanied by the formation of an artefactual compound of phenolic nature which it is not always possible to eliminate completely from the phospholipids by treatment with Na_2CO_3 and by adsorption chromatography. In the subsequent GLC analysis of the methyl esters of the fatty acids isolated from the synthetic phospholipids, this compound issues together with methyl palmitate, distorting the results of analysis.

We have succeeded in eliminating the formation of the artefact by modifying the method in the following way.

A weighed sample (20-150 mg) of a racemic mixture of sn-1,2- and sn-2,3-DAGs was dissolved in 0.5 ml of dry diethyl ether and the solution was cooled in ice. All the reagents and solvents were also cooled to 0°C. The mixing of the reagents was carried out at -5°C by the dropwise addition of a solution of the substance to a mixture of 2 ml of dry pyridine and 0.25 ml of freshly distilled phenyl phosphorodichloridate with shaking. The reaction mixture was kept at -5°C for 15-20 min and was then left at room temperature for 10-12 h. The subsequent treatment of the products and the isolation of fatty acid methyl esters from them were carried out as described previously [5].

TLC analysis was performed on a Chrom-4 instrument with a flame-ionization detector in the isothermal regime, using a 2.5 m × 4 mm column filled with 17% of poly(ethylene succinate)

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on Chromaton N-AW, at a column temperature of 202°C and a pressure of the carrier gas (helium) of 0.7 kgf/cm², and also a 1.2 m × 3 mm column filled with 5% SE-30 on Chromaton N-AW at a column temperature of 220°C and a helium pressure of 0.65 kgf/cm². On the polar phase, the by-product issued as a single peak with methyl palmitate, exaggerating its true amount, and on the nonpolar phase it was eluted together with the solvent.

The proposed modification of the method of phosphorylating a mixture of sn-1,2- and sn-2,3-diacylglycerols has permitted the formation of the by-product to be lowered from 33% to trace amounts.

LITERATURE CITED

1. H. Brockerhoff, J. Lipid Res., 6, 10 (1965).
2. C. Litchfield, Analysis of Triglycerides, Academic Press, New York (1972), p. 196.
3. W. W. Christie, Lipid Analysis, Pergamon, Oxford (1973), p. 269.
4. B. E. Phillips, C. R. Smith, Jr., and W. H. Tallent, Lipids, 6, 93 (1971).
5. S. G. Yunusova, S. D. Gusakova, and A. U. Umarov, Khim. Prir. Soedin., 430 (1982).

DIPHYLLIN FROM *Haplophyllum alberti-regelii*, *H. bucharicum*,
AND *H. perforatum*

E. F. Nesselova, D. M. Razakova,
V. I. Akhmedzhanova, and I. A. Bessonova

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In the separation of the neutral fractions of methanolic extracts of the epigeal part of *Haplophyllum alberti-regelii* Korov (Isanbai, Tadzhik SSR; flowering-incipient fruit bearing), *H. bucharicum* Litv. (village of Derbent, Baisun region, Surkhandar' province; flowering-incipient fruit bearing), and also the roots of *H. perforatum* Kar. et Kir. (Chimgan; withering of the epigeal part), we isolated a substance (I) (0.001, 0.1, and 0.1% of the weight of the dry raw material, respectively). This compound has mp 286-288°C (decomp., from acetone), and the composition C₂₁H₃₄O₇, mol. wt. 380; it gives a O-acetyl derivative (II) with mp 231-232°C (decomp.; from acetone) with mol. wt. 442.

The physical constants and spectral characteristics (IR, UV, NMR, and mass spectra) of (I) and (II) coincide with those of the aryl-naphthalide lignan diphyllin and its acetyl derivative [1, 2].

Among plants of the family *Rutaceae*, diphyllin was first found in *Haplophyllum hispanicum* [2] and then in *H. obtusifolium* [3], and *H. dauricum* [4].

Thus, new fairly rich sources of the lignan diphyllin have been found.

LITERATURE CITED

1. T. R. Govindachari, S. S. Sathe, N. Viswanathan, B. R. Pai, and M. Srinivasan, Tetrahedron Lett., 3517 (1967).
2. A. G. Gonzales, R. M. Ordonez, and F. R. Luis, An. Quim., 70, 234 (1974).
3. É. Kh. Batirov, A. D. Matkarimov, and V. M. Malikov, Khim. Prir. Soedin., 386 (1981).
4. D. Batsuren, Author's Abstract of Candidate's dissertation [in Russian], Tashkent (1982), p. 25.

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