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LIPOSOLUBLE PIGMENTS OF LEAVES OF *Brassica oleracea*

O. V. Reut, A. A. Kolesnik,
and V. N. Golubev

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The chlorophylls and carotenoids of vegetables have a substantial influence on their organoleptic and nutrient properties and may determine the regimes of their technological processing [1].

The sum of the pigments was isolated within the composition of the total lipids from the leaves of the *Brassica oleracea* L. of the early, middle-ripening, and late varieties Dimirskaya, Slava, and Amiger, respectively [2], and they were freed from the bulk of the liposoluble substances by column chromatography on silica gel [3] and were fractionated into chlorophyll, carotenes, and xanthophylls by using a column of sucrose [4]. Individual representatives were obtained by TLC on silica gel using the heptane-methyl ethyl ketone (5:3) solvent system for separating the lipophylls and chlorophylls, and hexane-acetone (96:4) for the carotenes. During the operations, the pigments were protected from degradation by adding a stabilizer [5] to the solutions and by performing the operations with subdued illumination.

The pigments were identified on the basis of the characteristic maxima on their absorption curves in the 200-700 nm region [4, 6], they were chromatographed in the presence of authentic samples, were stained with iodine vapor for the detection of colorless carotenes, and were subjected to the epoxide test [7] for the presence of a hypsochromic shift in the spectra of the xanthophylls.

The amounts of the pigments were determined from their individual specific extinction coefficients [8].

The composition and amounts of the various forms of liposoluble pigments in the cabbage leaves were as follows, (% of the total weight):

<u>Pigment</u>	<u>Dimirskaya</u>	<u>Slava</u>	<u>Amager</u>
Chlorophylls:			
chlorophyll a	21.0	34.4	39.9
chlorophyll b	6.5	11.6	25.5
pheophorbide a	29.6	20.6	16.7
pheophorbide b	17.3	17.7	6.8
chlorophyllide a	15.1	10.1	7.9
chlorophyllide b	10.5	5.6	3.2
Total amount, mg/kg	2.29	0.60	0.47
Carotenoids			
phytoene	2.1	1.3	—
phytofluene	2.7	1.0	—
β-carotene	25.4	41.6	60.7
α-carotene	4.9	10.3	18.9

M. V. Lomonosov Technological Institute of the Food Industry, Odessa. Translated from *Khimiya Prirodnykh Soedinenii*, No. 6, pp. 914-915, November-December, 1987. Original article submitted April 13, 1987.

lutein	38.7	27.9	9.1
violaxanthin	17.4	12.1	6.8
neoxanthin	8.8	5.7	4.5
Total amount, mg/kg	1.35	0.79	0.59

It must be mentioned that in the series of varieties Dimirskaya-Slava-Amager the relative amounts of chlorophylls a and b and also of α - and β -carotenes rose. Thus, the composition and amount of liposoluble pigments of cabbage depend substantially on variety characteristics, and this must be borne in mind in the choice of regimes for technological processing.

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THIN LAYER CHROMATOGRAPHY OF ROSINS ON "SILUFOL" PLATES

M. E. Perel'son and T. E. Sretentseva

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One of the possible methods of evaluating the quality of rosins of different origins used for the synthesis of rosin-maleic acid resins is TLC. Conditions for the TLC separation both of the resin acids themselves [1] and their methyl esters [2, 3] have been described in the literature. TLC on silica gels G and DFO has also been used for investigating samples of gum rosin, tall-oil rosin, and modified rosins [4].

We have performed experiments to select the optimum conditions for the separation of the components of rosins on Silufol plates. We set ourselves the task of achieving the maximum separation of the resin acids for the purposes of qualitative analysis and the most complete separation of the zone of abietic acid for its semiquantitative estimation in the samples under investigation.

As the revealing agents we used a 0.5% solution of vanillin in a mixture of concentrated sulfuric acid and ethanol (4:1), and a 9% solution of anisaldehyde in a mixture of ethanol and concentrated sulfuric acid (9:1). For the TLC separation we took an ethanolic solution of gum rosin. As the abietic acid standard we used a sample obtained from gum rosin by a somewhat modified method [5] that was characterized by its melting point, NMR spectrum, and TLC.

The most satisfactory separation of the components was achieved in the ethyl acetate-n-hexane (1:2) system. With this, the abietic acid zone was located in the R_f interval of 0.44-0.47. The individuality of this zone was indicated by the results of two-dimensional TLC with rechromatography in the chloroform-ethyl acetate (1:1) system.

The conditions found for chromatographic separation were used for comparing samples of isomerized and nonisomerized oleoresin and tall-oil rosins. A comparison of the chromatograms of the isomerized and nonisomerized rosins showed that the greatest changes were observed in the range of R_f values lower than those of abietic acid. Thus, it is precisely in