

CAROTINOIDS OF *Cudrania tricuspidata* FRUIT

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A serious problem in phytochemistry is to identify new sources with high carotinoid contents. In continuation of studies of plants that contain pigments [1-4], we investigated ripe fruit of *Cudrania tricuspidata* Bur. (Moraceae), a new species of cultured plant for Azerbaidzhan. Fruit samples were collected from plants introduced in the Botanical Garden of the Azerbaidzhan National Academy of Sciences (1999-2001).

The extraction of carotinoid pigments, purification, chromatographic separation, and spectral analyses were performed as previously described [1, 4-6]. Using TLC on Silufol and paper chromatography on Filtrax N15, *n*-hexane:diethylether (1:1, 1; 8:2, 2), and authentic carotinoids from carrot, tomato, and seabuckthorn, we detected nine carotinoids [1, 6, 7].

The carotinoid bands were scraped off and eluted by $\text{CHCl}_3:\text{C}_6\text{H}_{14}$ (7:3). The purity of the carotinoids was determined by TLC on Silufol. Absorption spectra were recorded on a Specord spectrophotometer in CHCl_3 and C_6H_{14} . Table 1 lists certain properties of the isolated carotinoids.

By comparing maxima in the range 200-600 nm, R_f values, colors of the isolated carotinoids, and standards, we identified in the fruit the following carotinoids: phytofluin, α - and β -carotene, neo- β -carotene, lycopene, polycopene, zeaxanthin, ruboxanthin, and lutein.

Photoelectrocolorimetry showed that the carotinoid content in the fruit depends on the meteorological conditions and varies in the range 20.8-24.3 mg% of the fresh mass. The highest amount of total carotinoids was found in the drier year 2000 (24.3 mg%).

According to the analysis, the composition of the carotinoids in the fruit was phytofluin, 0.8; α -carotene, 2.6; β -carotene, 3.5; neo- β -carotene, 0.8; lycopene, 5.0; polycopene, 1.7; zeaxanthin, 3.4; ruboxanthin, 2.5, and lutein, 1.8 mg% of the fresh mass.

The qualitative and quantitative contents of carotinoids in this plant species have not been previously reported. A method for obtaining carotinoids and a food concentrate from the fruit was developed.

TABLE 1. Certain Properties of Carotinoids from *Cudrania tricuspidata* Bur.

| Carotinoids | R_f in system 1 | λ_{max} | | Color |
|------------------------|-------------------|------------------------|---------------|--------------|
| | | in CHCl_3 | in hexane | |
| Phytofluin | 0.99 | - | 332, 347, 368 | Colorless |
| β -Carotene | 0.98 | 450, 475, 505 | 425, 453, 484 | Orange |
| α -Carotene | 0.96 | 432, 457, 485 | 420, 445, 474 | Yellow |
| Neo- β -carotene | 0.70 | 458, 476 | 444, 475 | Pink |
| Polycopene | 0.67 | 454, 484 | 434, 470 | Pink |
| Lycopene | 0.47 | 458, 484, 518 | 447, 471, 501 | Reddish-pink |
| Zeaxanthin | 0.17 | 429, 462, 494 | 428, 452, 483 | Yellow |
| Ruboxanthin | 0.10 | 439, 473, 508 | 433, 460, 483 | Orange |
| Lutein | 0.05 | 428, 455, 486 | 420, 448, 476 | Yellow |

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