ANTHOCYANS FROM FRUIT OF CERTAIN PLANTS OF THE GENUS *Prunus*

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In previous HPLC studies of anthocyans from fruits of plants from the Rosaceae family [1], insufficient attention was paid to plants of the genus *Prunus* [2]. One plum sample was used to show that anthocyans from fruit skin consisted mainly of cyanidin 3-glucoside and 3-rutinoside. This conclusion agrees with the literature [3]. However, other data [4] indicate that peonidin derivatives make a significant contribution to the anthocyan complex. Furthermore, the formation of cyanidin 3-galactoside has been reported [3].

The present article contains results of further systematic research using HPLC studies of plant anthocyans.

Skin (or the red part of the skin in green fruit) was peeled from fruit of different color and stage of ripening. The skins (0.20-0.25 g) were extracted by soaking in aqueous formic-acid (25 mL, 10%). Repeated extraction (until the material was completely decolorized) established that the degree of extraction was >95%. After diluting and adjusting the pH to 1 (HCl), spectra of the extracts were recorded. The HPLC studies of the extracts were performed as before [6] except that an additional step was used. This was absorption of the anthocyans on a Diapak C18 cartridge and subsequent desorption (to remove water-soluble accompanying extracted compounds).

The color of peach (*P. persica* L.) and nectarine fruit is due mainly to cyanidin-3-glucoside and a significantly smaller quantity of cyanidin-3-rutinoside. This agrees completely with previously published results [1]. In sloe fruit (*P. spinosa* L.), these anthocyans also dominate with the rutinoside prevailing [1]. During the research we also identified analogous peonidin derivatives (Table 1).

All fruit samples from nine varieties of *P. domestica* L. of various shape and different ripening times and coloration, except for one, were similar to sloe with respect to a marked predominance of rutinoside derivatives. However, the fraction of peonidin derivatives varied over a wide range from >60% to zero.

The coloration of fruits of cherry plum *P. divaricata* from three collections of the freely pollinated Pobeda variety with different ripening times was due to galactoside and arabinoside derivatives (characteristic of fruits of the apple subfamily, Maloideae) with a significant difference in the content of peonidin derivatives. If it is considered that one of the plum varieties contained galactoside derivatives in addition to glucoside and rutinoside derivatives [3], then the hypothesis of the origin of plum from crossing of sloe and cherry plum [2] is confirmed taxonomically by tracing the evolution of the anthocyan composition.

By researching the potential of plum as a source of natural dyes, we determined the content and retention of anthocyans in plum peel before and after drying at room temperature without exposure to direct sunlight. About 1000 mg (950-1050) of anthocyans per 100 g of starting material (calculated for cyanidin-3-glucoside) was found by spectrophotometry [5] in fresh peel of one plum variety (with the largest fraction of cyanidin-3-glucoside). Therefore, the anthocyan content of plum peel turned out to be just as rich in anthocyans as the skin of black currents *Ribes nigrum* L. (2004 season). The mass loss on drying the peel was just over 60%. Subsequent extraction afforded 780-860 mg per 100 g calculated for starting (moist) material. Thus, we found that the loss of anthocyans on drying plum peel in air was 9-18%.

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TABLE 1. Anthocyans from Fruit Skin of Plants from the Genus *Prunus*

Fruit	Fraction of Peak Area, %							Color and ripening time
	Cy				Pn			
	3-Gal	3-Glu	3-Rut	3-Ara	3-Gal	3-Glu	3-Rut	
P. persica	0	93.8	6.2	0	0	0	0	
P. vulgaris subsp. *nectarina* (Ait.) Shof.	0	88.5	11.5	0	0	0	0	
P. domestica	0	0.8	62.6	0	0	0.6	36.0	Dark
"	0	7.0	61.5	0	0	4.0	27.5	"
"	0	13.7	62.5	0	0	1.1	22.7	Blue
"	0	6.0	52.3	0	0	1.0	40.7	"
"	0	1.4	69.4	0	0	0.6	28.6	Red
"	0	9.5	85.9	0	0	0	4.6	"
"	0	56.5	37.3	0	0	1.8	4.4	"
"	0	25.9	11.9	0	0	11.9	50.3	Green
"	0	75.9	24.1	0	0	0	0	Blue
P. spinosa	0	11.4	53.5	0	0	2.7	32.4	-
"	0	27.6	58.3	0	0	2.3	11.8	-
P. divaricata	35.9	18.6	33.4	3.9	1.2	1.4	5.6	Early
"	31.9	16.7	19.5	2.4	6.5	6.4	16.6	Middle
"	12.4	40.8	45.3	1.5	0	0	0	Late

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