

P264. FLAVAN-3-OL COMPOSITION OF STRAWBERRIES

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During processing and storage of strawberry-derived products (jams, juices, purées, etc) a change of colour takes place from the original bright red to a brown hue. Anthocyanin transformations and browning reactions involving either phenolic compounds or reducing sugar are responsible for this change. Flavan-3-ols (catechins and proanthocyanidins) should play a role in these processes through their interactions with anthocyanins and their direct involvement in browning reactions. Furthermore, their antioxidant and radical scavenging activities may modulate some of these changes and contribute to the potential health and functional properties of the products. Many of the chemical and biological properties of the flavan-3-ols greatly depend on their structure, therefore not only the concentration of total flavanols but also the type of compounds present are important. As part of a project aiming to elucidate the mechanisms involved in the alteration of the colour in strawberry-derived products, in this study five strawberry varieties (Camarosa, Eris, Oso Grande, Tudnew and Carisma) from two different harvests (2001 and 2002) collected at maturity were analysed for their flavan-3-ol composition. Samples were subjected to repeated extraction with 75% aqueous methanol; after centrifugation, the solvent was evaporated in vacuum to obtain an aqueous extract, which was analysed by HPLC-DAD-MS (Lopes da Silva et al., 2002) and HPLC using detection after chemical reaction with *p*-dimethylamino-cinnamaldehyde (de Pascual-Teresa et al. 2000).

Average content of total flavanols in the strawberries analysed was 8.25 ± 1.93 mg/100 g, although important variations were found among different samples (table 1). No apparent relation seemed to exist between variety or year and the flavanol content, which can be supposed to be more influenced by edafo-climatic factors. Qualitative composition was quite similar in all the samples analysed (table 1), suggesting that a characteristic flavanol distribution exist in the strawberry no matter the variety or year. That composition is characterised by the presence of catechin-derived flavanols, namely monomeric catechin (C), procyanidin dimers B1 (EC-4,8-C), B3 (C-4,8-C), B6 (C-4,6-C) and B7 (EC-4,6-C), and trimer EEC (EC-4,8-EC-4,8-C), whereas epicatechin (EC) and EC-derived procyanidins were badly represented. The distribution of the major individual compounds detected is summarised in table 1. Monomeric catechin (C) was by far the most important individual flavan-3-ol in the five varieties studied ($42.7\% \pm 2.67$ of total flavanols on average), followed by procyanidin B3 ($11.7\% \pm 1.21$) and procyanidin B1 ($5.95\% \pm 2.95$). Minor percentages (<1%) of procyanidin dimer B2 (EC-4,8-EC), B4 (C-4,8-EC) and galocatechin and some related dimers were also found, however, hardly galloyled flavanols were detected in any of the strawberry varieties analysed.

Table 1. Distribution (%) of the most important individual flavan-3-ols and total flavanol contents in samples of five strawberry varieties collected in 2001 and 2002 harvests.

Variety	Year	Flavan-3-ol							Total flavanol content (mg/100 g)
		C	EC	B1	B3	B6	B7	EEC	
<i>Camarosa</i>	2001	46	1.6	3.0	11	1.3	1.9	2.2	5.9±1.0*
	2002	44	0.7	7.2	11	0.8	3.0	2.1	11.8±1.5
<i>Carisma</i>	2001	45	2.2	4.5	14	1.8	3.2	2.6	8.9±4.9
	2002	40	0.9	8.2	14	0.8	3.5	2.3	7.7±0.5
<i>Eris</i>	2001	46	2.8	3.3	12	1.3	3.5	3.2	8.1±0.4
	2002	43	1.7	11.0	12	0.7	4.3	3.5	10.3±2.6
<i>Oso Grande</i>	2001	41	1.1	3.0	10	1.3	3.9	1.8	8.8±2.6
	2002	43	0.5	9.0	11	0.6	2.9	2.4	8.6±0.5
<i>Tudnew</i>	2001	41	1.3	3.0	11	0.6	2.4	1.9	5.3±0.6
	2002	38	1.3	7.3	12	0.7	3.6	2.4	7.1±0.8

* n=5

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