PHYTOCHEMICAL PROFILING OF 18 STRAWBERRY CULTIVARS

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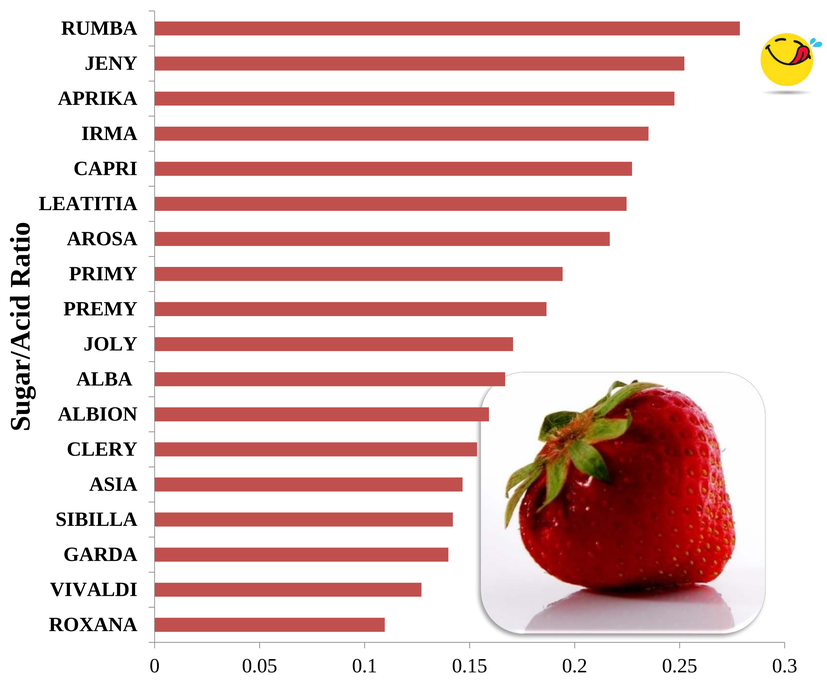
INTRODUCTION

Strawberry (*Fragaria×ananassa* Duch.) fruits are an important source of a wide variety of nutritive compounds such as sugars, vitamins and minerals, as well as bioactive compounds among which phenolics stand out as being of crucial importance. Therefore, fruits of 18 strawberry cultivars (′Roxana′, ′Arosa′, ′Joly′, ′Asia′, ′Alba′, ′Aprika′, ′Sibilla′, ′Garda′, ′Primy′, ′Jeny′, ′Laetitia′, ′Albion′, ′Capri′, ′Clery′, ′Premy′, ′Rumba′, ′Vivaldi′ and ′Irma′) were characterized using HPLC in relation to the concentration of individual sugars, organic acids and phenolic compounds.

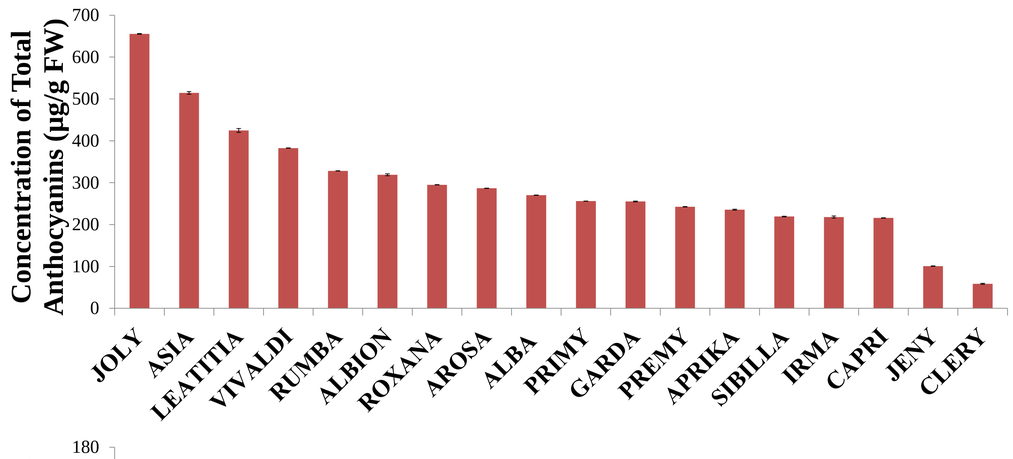
	Glucose (g/100g FW)	Fructose (g/100g FW)	Sucrose (g/100g FW)
ROXANA	1.73±0.20	1.99±0.34	nd
AROSA	3.20±0.32	3.65±0.33	nd
JOLY	2.58±0.21	2.72±0.14	0.40±0.02
ASIA	2.12±0.12	2.44±0.25	nd
ALBA	2.64±0.33	2.97±0.41	nd
APRIKA	2.70±0.31	2.89±0.53	0.78±0.15
SIBILLA	2.17±0.33	2.49±0.23	0.80±0.07
GARDA	2.08±0.08	2.50±0.17	nd
PRIMY	2.25±0.26	2.39±0.28	nd
JENY	4.34±0.31	4.68±0.40	nd
LEATITIA	3.52±0.26	4.19±0.46	nd
ALBION	2.62±0.39	2.89±0.48	nd
CAPRI	4.84±0.37	5.31±0.38	nd
CLERY	2.22±0.10	2.50±0.24	nd
PREMY	2.69±0.37	2.86±0.36	0.82±0.08
RUMBA	4.60±0.22	4.79±0.32	0.21±0.06
VIVALDI	1.95±0.21	2.26±0.25	nd
IRMA	3.18±0.16	3.41±0.09	nd

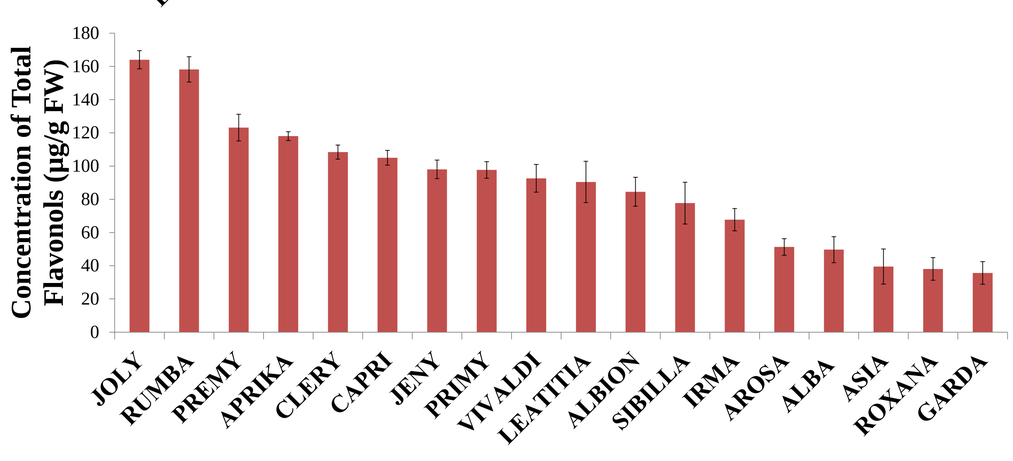


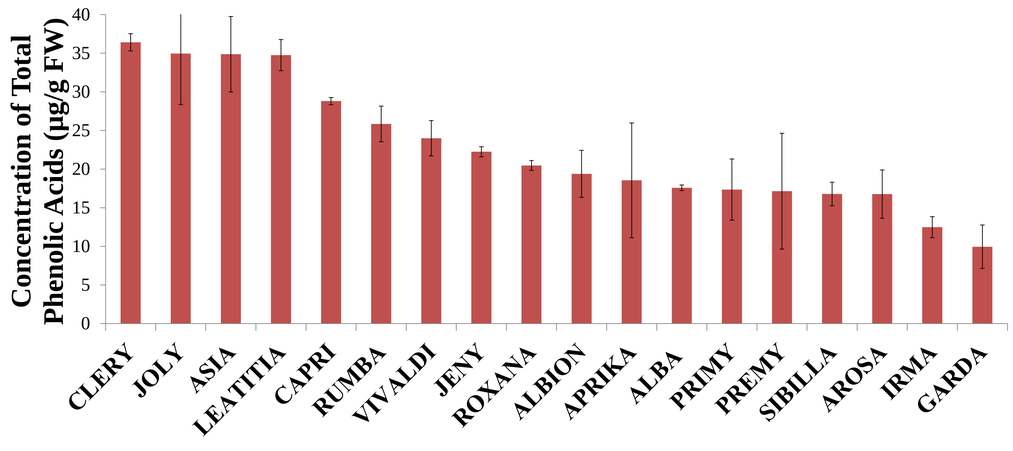
	Citric acid (mg/g)	Malic acid (mg/g)	Shikimic acid (μg/g)	Fumaric acid (μg/g)
ROXANA	4.42± 1.07	3.02± 0.20	18.75± 0.42	7.70± 0.62
AROSA	4.48± 0.37	1.85± 0.15	17.00± 0.46	8.25± 0.26
JOLY	4.86± 0.59	2.34± 0.32	19.84± 0.65	6.34± 0.31
ASIA	3.52± 0.42	1.69± 0.17	18.65± 0.74	7.25± 0.38
ALBA	4.21± 0.64	2.80± 0.45	18.00± 1.52	8.60± 0.57
APRIKA	3.60± 0.27	2.33± 0.31	10.50± 0.68	9.30± 0.42
SIBILLA	6.24± 0.31	2.70± 0.31	16.43± 0.31	13.05± 0.31
GARDA	3.08± 0.31	2.62± 0.24	19.30± 0.74	7.80± 0.15
PRIMY	3.45± 0.21	1.73± 0.16	12.70± 0.11	6.00± 0.15
JENY	4.81± 0.51	2.93± 0.21	21.55± 1.56	6.50± 0.43
LEATITIA	6.86± 0.43	2.76± 0.13	16.40± 0.64	8.30± 0.74
ALBION	5.12± 0.33	2.88± 0.01	17.81± 1.17	8.78± 0.57
CAPRI	5.44± 0.37	3.73± 0.15	27.00± 1.48	8.48± 0.32
CLERY	3.69± 0.11	2.06± 0.10	17.20± 0.61	7.80± 0.26
PREMY	4.96± 0.72	2.84± 0.45	14.85± 1.17	11.45± 0.31
RUMBA	5.93± 0.30	3.58± 0.17	15.35± 0.71	9.60± 0.30
VIVALDI	5.68± 0.08	2.63± 0.24	15.50± 0.95	9.35± 0.31
IRMA	4.14± 0.09	1.92± 0.12	12.49± 0.54	9.49± 0.43

MAJOR FINDINGS:

- The relative contents of sugars and acids is considered to be an important indicator for evaluation of the flavor quality and determination of the maturity of strawberry fruit. Thus, sugar to acid ratio in fruits of different strawberry cultivars were evaluated and found to be the highest in ′Rumba′, ′Jeny′ and ′Aprika′.
- ′Capri′, ′Rumba′ and ′Jeny′ were dominant strawberry cultivars in terms of glucose, fructose, malic and shikimic acid content.
- ′Laetitia′, ′Sibilla′, ′Rumba′ and ′Capri′ differed from other cultivars by its high content of citric acid.
- The highest concentrations of total anthocyanins were detected in ′Joly′, ′Asia′ and ′Leatitia′. These cultivars were also rich in concentration of total phenolic acids.
- ′Joly′ were also dominant in concentration of total flavonols, together with ′Rumba′.
- In contrast to concentration of total phenolic acids in which ‘Clery’ was the richest, the same cultivar had the lowest concentration of total anthocyanins, while ′Garda′ was the poorest in total phenolic acids and flavonols.
- Cultivars ′Joly′, ′Asia′, ′Leatitia′, ′Rumba′, ′Jeny′ and ′Aprika′ were superior to others and found to be promising in terms of overall nutritional properties.







CONCLUSION

The quality of fruit is directly related to its metabolic profile constituted of individual primary and secondary metabolites. Considering that sugars and organic acids define the sensorial quality of strawberry fruit, their optimal ratio combined with phenolic compounds plays important roles in the fruit quality definition and characterization of strawberries as a functional food.

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