PRODUCTION OF INSTANT ROSEHIP TEA AND EVALUATION OF ITS KEY COMPONENTS DURING STORAGE

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Introduction

The genus Rosa (Rosacaeae) contains more than a hundred species that are widely distributed in Europe, Asia, the Middle East and North America. Rosehip (*Rosa canina* L.), which is belongs to Rosaceae family, is the richest natural source of vitamin C. Moreover it is a great source of vitamins, tocopherols, flavonoids, carotenoids, phenols, essential oils and minerals. Due to its rich bioactive compound, *Rosa canina* L. is usually used for preservation and treatment of common colds, gastrointestinal disorders, diabetes and infections. In these days, rosehip has been popular because of its Vitamin C content.

The fruit is mainly processed into marmalade and nectars. It is also traditionally dried and stored as whole to prepare rosehip tea. Recently, it has been available as tea bag after crushing and removing the seeds and any adjacent parts and blended with hibiscus. However, as ascorbic acid is very sensitive to environmental factors such as heat and light, it rapidly degraded during the drying, storage, and preparation steps.

Therefore in this study, instant rosehip powder which is rich in functional compounds and ease to use were produced and stored for 90 days in two different temperatures (4 and 20ºC)

Results and Discussions

Sugar content of the dried rosehips, extracts and powder was determined in terms of sucrose, glucose and fructose and the results are given in the table 1.

Table 1. Sugar content of the samples (g/100g dm)

Samples	Dried rosehip	Extract	Rosehip powder
Sucrose	3.61^{c}±0.23	5.99^{a}±0.04	2.83^{d}±0.02
Glucose	9.45^{c}±0.11	15.24^{b}±0.11	14.69^{b}±0.01
Fructose	10.37^{c}±0.23	18.60^{a}±0.26	18.37^{a}±0.30
Total sugar	23.43^{d}±0.35	39.83^{a}±0.11	35.90^{b}±0.27

Phenolic composition of the fresh rosehip fruits, dried rosehip and rosehip powder are shown in Table 2.

Table 2. Phenolic composition of samples (mg/100 g dm)

Phenolics	Fresh fruit	Dried rosehip	Rosehip powder
Gallic acid	7.40^{a}±0.05	2.75^{b}±0.01	2.15^{c}±0.01
Vanillic acid	2.84^{a}±0.01	1.49^{c}±0.01	2.39^{b}±0.01
Chlorogenic acid	1.28^{a}±0.01	0.71^{b}±0.01	0.54^{c}±0.01
3-Hydroxy cinnamic	0.19a±0.00	0.16^{b}±0.01	0.15^{b}±0.01
o- coumaric acid	0.55±0.00	Nd	nd
Ferulic acid	0.23^{a}±0.10	0.16^{c}±0.01	0.17^{b}±0.01
Quercetin	2.07^{a}±0.15	2.43^{a}±0.03	nd

Harvesting rosehip

Drying of rosehip

Blending with hibiscus

Extraction (Loading ratio 5.3; temperature 64ºC; time 5.4 min)

Concentration to 5-6ºBx

Spray Drying (Ti 130ºC, To 85ºC, Maltodextrin 18.4%)

Analyses

Sugar composition

Phenolic composition

Ascorbic acid content

Total monomeric anthocyanin

Obtained powders were storage and analysed on the days 0, 10, 30, 60, 90 to determine storage stability of the AA and TMA at 4°C and ambient temperature.

With the increase of storage time, the degradation of ascorbic acid increased and this being is attributed to the increase in moisture content and water activity as well as presence of oxygen and trace metals. AA degradation of powders showed a linear trend throughout the storage period (Figure 1) and were determined to be 41.4% and 48.2% at 4°C and ambient temperature, respectively.

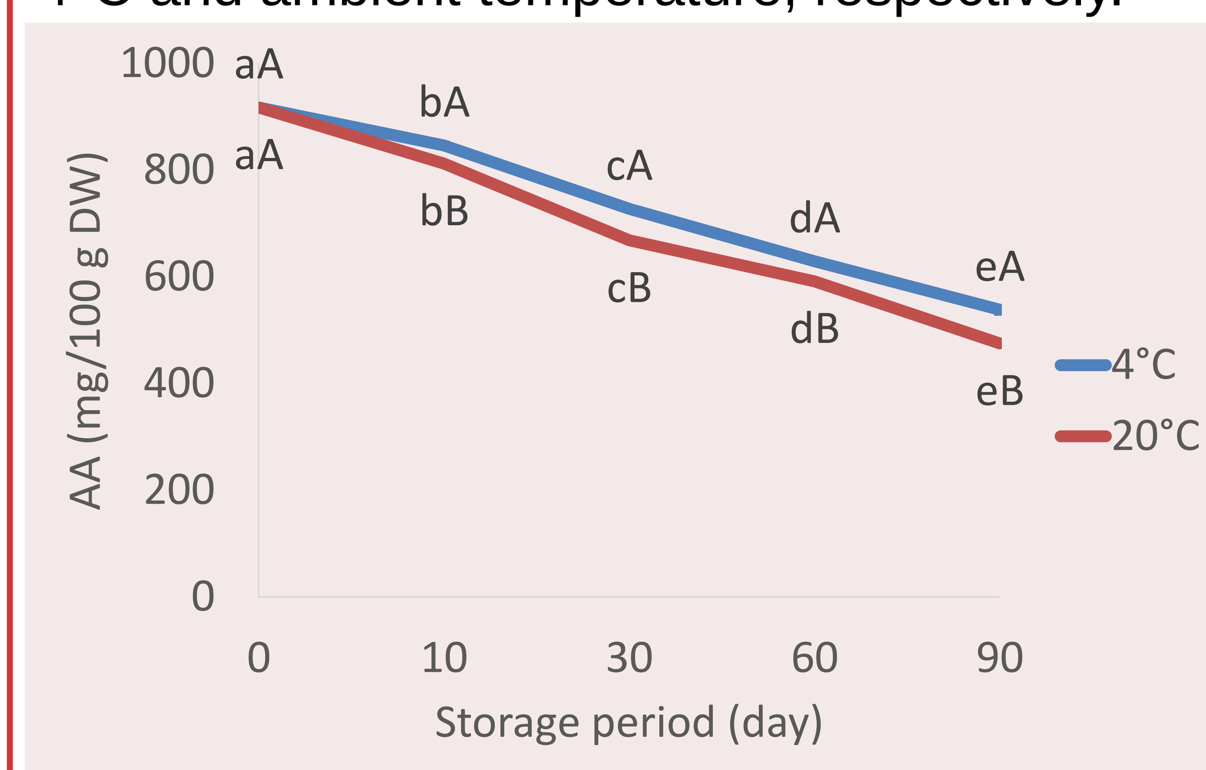

Figure 1. Effect of storage on AA content of product

The TMA content of the products decreased at the both storage temperatures with the increased storage time and this circumstance is associated with the increment of water content and activity of products and presence of oxygen. Moreover, the product has abundant amount of sugar and thus the decreased anthocyanin content may also be attributed to Maillard reaction which generally occurs at the presence of reducing sugars and proteins during food storage for a long time. TMA degradation of the products showed a Sigmoidal trend (Figure 2.) and were determined to be 23.3 and 37% at 4°C and ambient temperature, respectively. Because of anthocyanin's thermos-sensitive structure it was expected that the increase of temperature would step up degradation speed of anthocyanins.

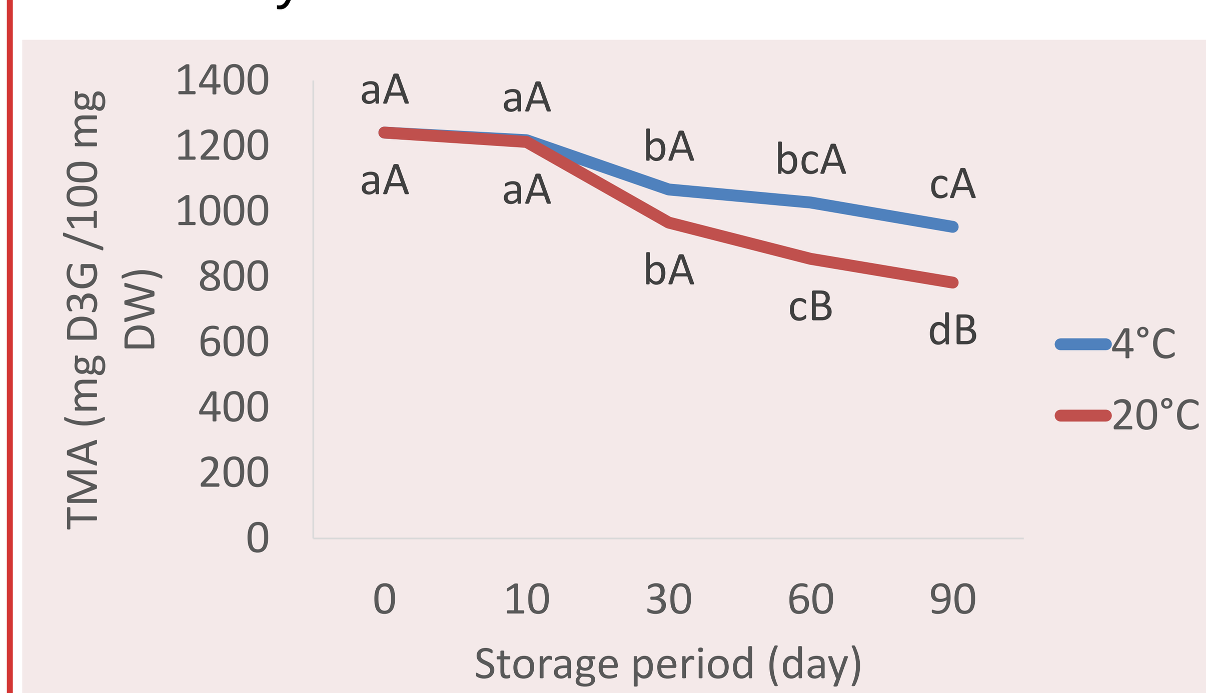

Figure 2. Effect of storage on TMA content of product

Conclusions

In the present study rosehip and hibiscus mixture was exracted, concentrated and spray dried to produce an instant soluble product rich in ascorbic acid and total monomeric anthocyanin. After these processes an instant rosehip/hibiscus powder containing 0.92 g/100 g AA and 1.11 g delphinidin-3-glucose equivalent/100 g TMA which corresponds 50.8% and 63.1% of the raw materials, respectively was produced. The obtained product was stored for 90 days at 4 and 20ºC to observe the fate of AA and TMA. According to results while more than 40% of AA degraded regardless to the temperature, TMA degradation was lower in products stored at 4ºC.