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# "MEDICINAL AND AROMATIC PLANTS IN GENERATING OF NEW VALUES IN 21st CENTURY"

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## Book of Abstracts

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# International Conference

## Medicinal and Aromatic Plants in Generating of New Values in 21st Century

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of the heavy metals and nutrient elements (B, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Zn) in all samples (washed-unwashed leaf, stem, root and soil) were done using an Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES). As a result of the measurements, it was observed that heavy metal pollution is affected by the industrial activities significantly.

***Keywords:*** Mint, heavy metal, nutrient, pollution, industry.

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# DOSE HARVESTING SEEDLESS BARBERRY AT DIFFERENT HOURS PER DAY MAKE ANY DIFFERENCES IN FRUIT QUALITY INDICES?

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Today many researches are focused on the small fruits such as seedless barberry that are considered as source of organic and inorganic nutrients and medicinal compounds [1]. Qualtative indices of berries such as anthocyanins are affected by many invironmental factors as temperature and light [4,6]. Therefore, this expriment was conducted to evaluated the effects of variability of daily temperatures on qualitative indices of seedless barberry. The experiment was carried out as a split plot in time based on CRBD with three replications in Qayen, Southern Khorassan province, Iran, in year 2010. The experimental treatments were five different times of harvesting per day at 16 Sept. and 17 Oct., 2010. Harvesting was done every three hours which strated from 07.00 am (before sunrise) and ended at 19.00 pm (after sunset). Different hours temperatures were recorded at 16 Sept. and 17 Oct (Table 1). The qualitative indices such as pH, brix percenatge, acidity and anthocyanin were measured in each harvesting time. Results showed that qualitative indices of barberry fruits were improved in early morning and late afternoon, moreover, all of the indices were improved with delaying in harvesting date (Table 2). Many researches were shown that the amounts of anthocyanin, acidity and soluble solids are affected by

changing temperature [3]. Anthocyanin and acidity had a decreasing trend with increasing of temperature (Table 1,2), that it seems to be related with decreasing of brix [5]. It has been reported that anthocyanins are more stable in low temperatures and high acidity [3,4] that observed before sunrise and after sunset.

Table 1. Temperatures recorded at different times of harvesting at 16 September and 17 October, 2010

| | 07.00 am | 10.00 am | 13.00 pm | 16.00 pm | 19.00 pm |
|---|---|---|---|---|---|
| 16 September | 13 °C | 21 °C | 32 °C | 19 °C | 15 °C |
| 17 October | 4 °C | 17 °C | 27 °C | 15 °C | 11 °C |

Table 2. Effects of harvesting time and harvesting date on quality indices of barberry fruit.

| Treatment | pH | Brix (%) | Acidity(%) | MI † | ACY‡ |
|---|---|---|---|---|---|
| Hours of harvesting | | | | | |
| 07.00 am | 3.245$^{a}$ | 21.2$^{a}$ | 3.7$^{b}$ | 3.40$^{a}$ | 23.7$^{a}$ |
| 10.00 am | 3.246$^{a}$ | 9.70$^{b}$ | 3.1$^{c}$ | 3.03$^{b}$ | 16.6$^{b}$ |
| 13.00 pm | 3.246$^{a}$ | 10.0$^{b}$ | 2.9$^{c}$ | 3.33$^{a}$ | 17.6$^{b}$ |
| 16.00 pm | 3.185$^{b}$ | 11.9$^{a}$ | 3.8$^{ab}$ | 3.19$^{ab}$ | 24.8$^{a}$ |
| 19.00 pm | 3.183$^{b}$ | 12.5$^{a}$ | 4.0$^{a}$ | 3.18$^{ab}$ | 25.7$^{a}$ |
| Dates of harvesting | | | | | |
| 16 September | 3.0b | 10.1$^{b}$ | 3.7$^{a}$ | 2.6$^{b}$ | 16.3$^{b}$ |
| 17 October | 3.3a | 12.5$^{a}$ | 3.3$^{b}$ | 3.7$^{a}$ | 27.1$^{a}$ |

† MI: Maturity index, ‡ ACY: Anthocyanin (mg/100 ml extract)

***Keywords:*** Berberis vulgaris, medicinal plant, Anthocyanin

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