

Genotypes White Mulberry and Black Mulberry Genetic Diversity between them

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Abstract

Mulberry is subtropical tree., Genus: *Morus*, Family *Moraceae*, species *Morus alba* L This tree has three main species named for the fruit colored the best-known cultivar, white, red, and black mulberry (*Morus alba*, *Rubra* and *Nigra*). In our country found white mulberry and black mulberry, with Latin name is *Morus alba* L and *Morus nigra* L. *Morus* red don't growing in our country but have with color white to pink. Zones which grow white mulberry is Shkoder, Tirana, Dures, etc. and zones which grow mulberry is Hill zones and before mountains. In this study is evaluation some traits mainly in fruit of tree, form of fruit, color fruit, antocian, flavonoid, poliphenol. The aim of this study is to know diversity between two species of Mulberry, mulberry Alba and mulberry nigra. Mulberry Alba is deciduous, has a dense spreading crown, generally wider than high of the tree. The height of tree is 23- 30 cm, have a pyramidal shape or pyramidal shape. The leaves are light green in color, alternate, cordate. The flowers are unisexual, greenish in color flowers. The trees are monoecious or dioecious without buttres (Orwa., *et al.* 2009). The fruit is different is small, is medium and big. In this study are analyses of some chemical indicators such as PH, humidity, Anthocyanin, Polyphenols, Flavonoid is in fruit. Contribute to the pigment of fruit color. Anthocyanin contribute to identify of inflorescence fruit and flowers. Anthocyanin of black mulberry is 219.02 mg/LCYA 3 gluten, white mulberry don't have. Poliphenol are antioxidant are secondary metabolites of plant, for black mulberry is 2506, white mulberry is 561.7 mg/L GAE, Flavonoid for white mulberry is 23.43 mg/L, black mulberry don't have. Sugar for black mulberry is 81.2% and white mulberry is 79.6 %. The data are subjected to statistical processing.

Keywords: *Moraceae*; Anthocian; Flavonoid; Sugar; Diversity; Color

Introduction

Mulberry is a fruit tree of the *Moraceae* family, Genus *Morus alba*, *Morus nigra*, *Morus Ruba*. The mulberry tree originates from China. Designed to enter Europe in recent centuries. White mulberry is found in East America, Massachusetts. Black mania originated in West Asia and entered Europe before Roman times. In our country, white mulberry is widespread in the region of Tirana, mainly in family gardens, in Dures, Shkodra and the south of Albania it belongs to the Mediterranean climate. Black Mulberry is located in the Korca region. It is a sweet plant, grows to a height of 25 - 30 cm, and has a scattered and broad crown with branches hanging down. The white mulberry has a pyramidal crown shape or a fallen crown shape. The leaves are pale green, alternating, in the form of petiolates and cordate and with a very variable base. They can be simple or compound (3 - 5 lobes) in some dental,

palm, venous, coraceous and caduceus trees. The flowers are one-sex, green in color. The flower are uni sexual greenish in color. The trees are monoecious and dioecious without bouquets (Onva., *et al.* 2009). The fruit is 5 cm long. The destination is for fresh consumption, jam, rak. Seeds are very small at 100 seeds weight 2.2 - 2.3 gr (Ecocrop 2019). (Onva., *et al.* 2009, Alonzo 1999). It is a fruit tree developed with a high body, 20 30 m. Beautiful tree, seemingly picturesque, densely shaped, the main branch is outstretched. A stiff stalk, wider than the height of the tree. The leaves are of different sizes, falling leaves, serrated and often with different lobes. It is a rule that abnormal leaves are produced by shoots or nipples and give very strong new branches. Dio flowers, separate sexes, small flowers, more or less cylindrical. The fruit is elongated, the tail of the fruit short. The fruit is black, with red cherry juice, sweet. It is a gathered fruit, slightly resembling a large berry, used for fresh con-

sumption and recelna, many producers, ripen in June. This study confirms the variability between the characteristics of white mulberry and black mulberry. The indicators are analyzed according to the table below.

Materials and Methods

The study was conducted mainly in the region of Tirana and in the region of Elbasan. *Morus nigra* and *Morus alba* species have been evaluated. Morphological indicators were evaluated and special features were characterized according to the IPGRI descriptors, ECPGR manors. All developmental phenophases were analyzed and fruit samples were taken at ripening time. These samples were analyzed for the dimensions of the fruit, the color, but also for their

chemical components. The samples were analyzed in the Chemistry Laboratory of the Faculty of Food Technology, UBT, in May-June.

Results, Discussion and Conclusion

From the analysis of morphological indicators of mulberry genotypes of white mulberry and black mulberry species, it turned out that white mulberry is small and large. The color is the same. The dimensions of the fruit vary as well as the size, weight of the fruit. The chemical composition is the same. The taste of the fruit is the same.

Trunk height of white mulberry is 90 cm, The length of the branches in the four directions is 160 cm, 240 cm, 220 cm, 280 cm. 17 - 20 fruit for branches.

| Samples | ph | Tss | Moisture | Antocian total | Poliphenol Mg / GA | Flavonoidet mg |
|--------------|------|------|----------|----------------|--------------------|----------------|
| Morus alba < | 6.25 | 13.1 | 79.6 | ----- | 561.7 | 13.42 |
| Morus alba < | 5.8 | 9.0 | 80.3 | ----- | 570.0 | 23.43 |
| Morus nigra | 5.49 | 11.8 | 81.2 | 219.02 | 250.0 | ----- |

Table 1: Analyses of chemic indexes for mulberry genotypes.

| Genotypes | Color L | Surface L | Length L | Width L | Weight fruit/gr | Color fruit | Length F | Width F |
|-----------|-------------|-----------|----------|---------|-----------------|-------------|----------|---------|
| Mab | White green | soft | 30.3 | 20.5 | 25 | White | 10.5 | 10.0 |
| Mab | White green | soft | 18.5 | 15.5 | 35 | White | 30.0 | 17.0 |
| Mng | Black green | soft | 35.5 | 24.0 | 40 | Black | 40.8 | 20.0 |

Table 2: Morphological indexes of genotypes.

Humidity was determined according to the white mulberry genotype and black mulberry genotype according to the standard method, the values were documented. Phenol content (TP) was determined. TP extracts were expressed as milligrams of gallic acid equivalent * GAE (per 100 g dry weight of the sample. Determination of Flavonoid (TF) content. TF of extracts was determined from one equivalent + CE catechin per 100 g for drying sample.

The AT content was determined according to the ph differential method.

Anthocyanins and flavonoids are important pigments responsible for fruit coloring. Mulberry fruit is rich in anthocyanin and flavonol. The results show that the content of white mulberry in phenol genotypes was, 561.7 for large white mulberry, 570.0 for small white mulberry and 250.0 for black mulberry, mg of gallic acid equivalent (GAE). The phenol content is different between white mulberry and black mulberry, the phenol content of white mulberry is twice as much as the phenol content of black mulberry.

The difference between mulberry genotypes for Polyphenols may be genetic traits. Anthocyanin content characteristic only for black mulberry, important indicator that determines the color, while the flavonoid content is analyzed only for white mulberry, the results show that the genotypes of white mulberry largely have flavonoid content once more than the genotypes of mulberry with small mass. The results show that polyphenols are important for all types of berries, while anthocyanins and flavonoids are important only for the blackberry genotype. Trix brix ranged from 9 to 11.8 to 13.1, the results show that the genus of small white mulberry tastes sweeter than the genotype of large white mulberry when black mulberry is a sweet-tasting fruit. and some genotypes are different. The taste of the fruit is a feature that depends on the type, variety, shape and ripening. The pH result is almost the same for the genus White mulberry and black mulberry genotypes and more for the small white mulberry genotype, an indicator related to geographical position [1-11].

Graph 1: Indexs of trunk and branches for genotypes.**Graph 2:** Correlation of chemic indexs.**Figure a****Bibliography**

1. Assen Ebrahim., *et al.* "Nutritional value of mulberry (*Morus alba*) forage harvested during dry and wet seasons in northern Ethiopia". *Indian Journal of Animal Nutrition* 33.1 (2016): 45-53.
2. Bamikole MA., *et al.* Nutritive vakue of mulberry (2005).
3. Dandin SB., *et al.* "Crossability studies in mulberry". *Indian Journal of Sericulture* 26 (1987): 11-14.
4. Das BC and Krashnaswam S. "Same observations on inter-specific hybridization in mulberry". *Indian Journal of Sericulture* 4 (1965): 1-8.
5. Edrogan U. "Selction of mulberries (*Morus spp*) grown in Ispir and Pazaryolu in Erzurum PHD Thesis". Ataturk University Erzurum and Pazaryolu in Erzurum Turkey (2003).
6. Gururajan MK. Varieties of mulberry a classification, Indian, *Silk* 1 (1960): 12-15.
7. JY Lin and CY Tang. "Determination of total phenolic and flavonoid contents in selected fruits and vegetables, as well as their stimulatory effects on mouse splenocyte proliferation". *Food Chemistry* 101 (2007): 140-147.
8. Nei M. "Analysis of gene diversity in subdivided populations". *Proceedings of National Academy of Science, USA* 70 (1973): 3321-3323.
9. SH Ba and HJ Suh. "Anthoxidant activites of five different mulberry cultivar in Korea". *LWT- Food Science and Technology* 40 (2007) 955-962.
10. Tikaden A and Roy BN. "Evaluation of mulberry germplasm based on growth and anatomical parameter". *Indian Journal of Forestry* 26.1 (2003): 25-29.
11. Vijayan K. "Characteriazation of mulberry genetic resource and crop evaluation". 52: 77-86.

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