

# Investigation of Physicochemical Characteristics of Wild Fruits and Berries from the Walnut-fruit Forests of Southern Kyrgyzstan

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## 1. Introduction



In the Kyrgyz Republic, forested areas cover 4.25 % of the total country area and these forests are home to 183 different tree and shrub species. In the south, unique walnut-fruit forests grow on the slopes of the Fergana and Chatkal mountain ridges, which are located right at the interface of the two great mountain systems of Tien-Shan and Pamir and the Alai. These forests are of great importance for the local population, living in or near the forests, as a source of valuable fruits, timber, and medicinal raw materials [1]. This study was conducted in response to recent interest in the nutritional and health benefits of wild fruit and berries. The physicochemical properties and nutritional value of the wild fruits and berries, namely, apple (*Malus sieversii* var. *kirgizorum*), barberry (*Berberis oblonga*), cherry-plum (*Prunus divaricata* black, red, yellow), dog-rose (*Rosa canina*), hawthorn (*Crataegus songorica*), pear (*Pyrus korshinskiy*), and sea buckthorn (*Hippophae Ramnoides*) were determined to evaluate the capacity for use in food processing industry. The fruits and berries were selected based on their nutritional aspects along with medical properties.

## 3. Materials and methods

A study was conducted during the harvesting season of wild fruits and berries (2017, September). The fruits were harvested from natural walnut-fruit forests Arslanbob (N 41°22'8.33", E 72°3'45.974", Altitude: 1300 m) and Kyzyl-Unkur (N 41°18'20.903", E 72°57'48.209", Altitude: 1466 m). Physicochemical properties of the wild fruits and berries were detected according to standard methods. The following contents were determined: moisture, carbohydrates, alimentary fiber, vitamin C, ash, pH, titratable acidity, total polyphenols (TPC). The amount of total polyphenol in the wild fruits and berries extracts was determined using modified Folin-Ciocalteu colorimetric method [2].

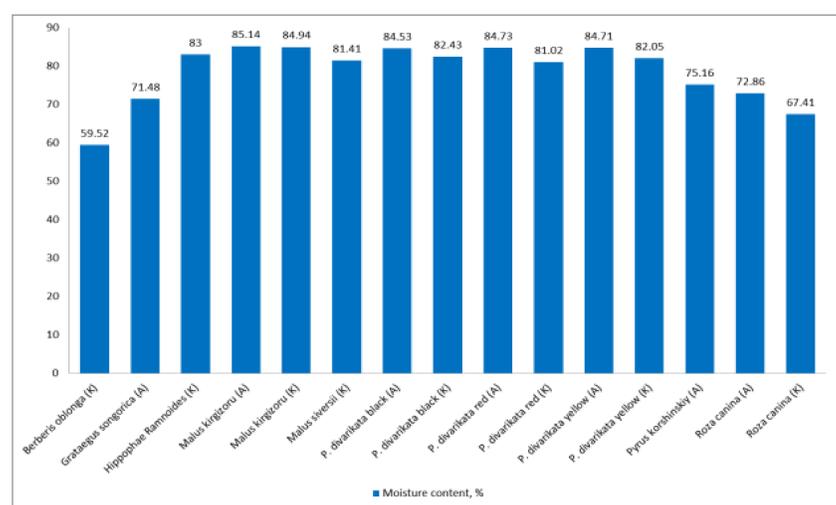


Figure 1: Moisture contents of investigated fruits and berries

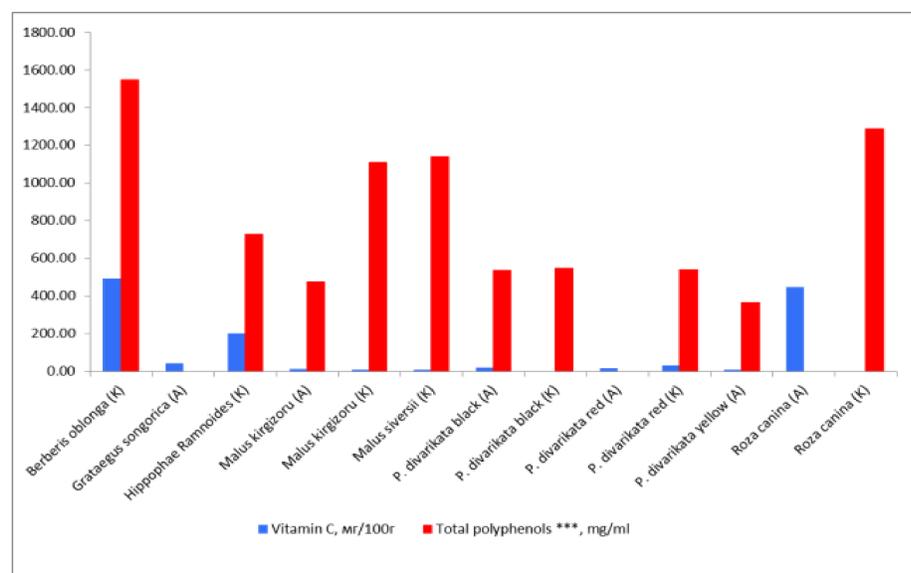
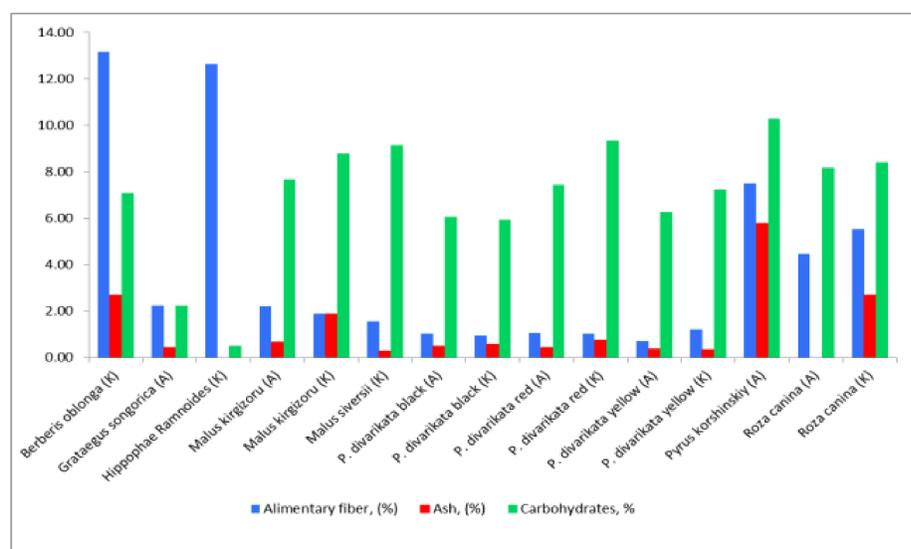


Figure 2: A) Alimentary fiber, ash and carbohydrate contents; B) Vitamin C and TPC of investigated fruits and berries



<http://www.agrowebce.net/wkg/forestry/forest-ecology-and-biodiversity-conservation/>, last accessed: 27.09.2017

## 5. Conclusion and recommendations

The results of analysis showed that the investigated fruits and berries have moisture content ranged between 59.52 % (*Berberis oblonga*) + 85.14 % (*Malus sieversii* var. *kirgizorum*), carbohydrates 0.50 % (*Hippophae Ramnoides*) + 10.29 % (*Pyrus korshinskiy*), alimentary fiber 0.73 % (*Prunus divaricata* yellow) + 13.19 % (*Berberis oblonga*), vitamin C 7.39 % (*Prunus divaricata* yellow) + 492.35% (*Berberis oblonga*), ash 0.30 % (*Malus sieversii*) + 2.70 % (*Rosa canina*, *Berberis oblonga*). Among all the samples analyzed, the *Berberis oblonga* revealed the highest TPC at 2578 mg gallic acid equivalents/L followed by *Rosa canina* (2144 mg GAE/L). Between the samples, the lowest TPC value was found for *Prunus divaricata* yellow (611 mg GAE/L).

All the studied fruits and berries can serve as a good source of bioactive compounds in the human diet. From the view of the phenolic content and antioxidant activity, barberry can be regarded as good candidate for raw materials in production of health beneficial functional foods.

## References

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