



Commercial utilization of the wide – spread Cornelian cherry (*Cornus mas* L.) population in Slovakia

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Introduction

Cornelian cherry belongs to original wide – spread plant species. Natural populations of *Cornus mas* L. are situated in the area of Vihorlatske hills, White Carpathians, Slanske hills and Silická plateau (Šimánek et al., 1977). Cornelian cherry is growing at altitudes up to 1400 m above the sea level and it is not arduous on growing conditions. It is growing well on sunny locations and also tolerates droughts as well as calciferous soils (Šimánek et al., 1977, Wolf et al., 1990). Shrubs or trees have specific hard wood. Their viability can reach 200 – 300 years. Cornelian cherry tolerates frost up to – 40 °C (Šimánek et al., 1977).

It provides very interesting production of nutritious valuable fruits, which are ripening from the end of August to beginning of September. The yield from one shrub or tree can be 30 to 60 kg (Šimánek et al., 1977 and Walter et al., 1990). Fruits are containing vitamins C and E, carotenoids and many biologically active substances with curative effects such as phenolcarbon acids, flavonoids, anthocyanins and many other (Jefremov and Šreter, 1966, Balášik, 1973). Many authors reported practical utilization of fruits and other parts of cornelian cherry for curative purposes (Chiej, 1984, Chevalier, 1996, Grieve, 1984).

Results

Advantages of *Cornus mas* L.

- adaptability to Slovak geographical conditions – its natural populations are occurred in the area of Strážovská hornatina, Vihorlatské vrchy, Biele Karpaty, Slanské vrchy a Silická planina (Šimánek et al., 1977),
- *Cornus mas* L. grows in altitude up to 1400 m and is not pretentious on growing conditions, tolerates sun, drought and calcareous soils (Šimánek et al., 1977), shrubs or also trees after shaping are characterized with hard wood, their vitality can reach even 200 – 300 years, tolerates frost up to – 40 °C (Šimánek et al., 1977),
- flowering before leaf-buds budding, very attractive in the spring, rich flowering and the flowers in the umbel are colored with the nice yellow color, flowers are rich in pollen and therefore are very often visited by bees after a long winter season (Šimánek et al., 1977),
- provides interesting production of nutritional valuable fruits, which are maturing at the end of August to the beginning of September, whereas one shrub can produce 30–60 kg of fruits (Šimánek et al., 1977 a Walter 2001),
- fruits contain very interesting compound rich on content of vitamins C and E, carotenoids, and many biological effective substances with healing effect such as phenol- carbon acids, flavonoids, antocyanins and others (Jefremov and Šreter 1996, Balášik 1973),
- fruits are very suitable for direct nutrition in fresh, conserved and dried status, are used for jams, syrups, stewed fruits, wine, liqueurs and for other interesting products (Štrekla, 1989, Šimánek et al., 1977),
- many native and foreign authors mention practical use of fruits and other parts of the plant for healing purposes (Chiej, 1984, Chevalier, 1996, Grieve, 1984 et al),
- dogwood Family (Cornaceae) has 12 genera and 100 species what can help in breeding methods transfer of interested characters and properties in development of very interesting cultivars (Dostál and Cervenka, 1983),
- practical usage in landscaping and ornamental gardening,
- characterized with high tolerance against biotic factors, can be implied among ecological important species

Objectives

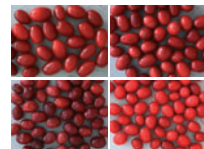
1. Designate the variability of economical traits on fruits in the wide spread populations in Slovakia
2. Designate chemical composition of fruits and stones

Materials and methods

Experimental study was realized with 134 ecotypes collected in the Gemere region in the southern part of Slovakia. From each ecotype were evaluated 50 fruits in mature status in traits – weight (g), length, width and thickness (mm) and others. (Tab.1 and 2). From the lyophilized flesh of fruits was determined content of macro and micro elements (Tab.3) and other metabolites.



Variability in the shape and color of fruits



Variability in the shape and color of stones



Conclusions

1. 134 ecotypes of cornelian cherry (*Cornus mas* L.) from the wide spread population in southern regions of Slovakia were experimentally evaluated
2. Collection was evaluated on morphometrical traits of fruits and stones and chemical analysis of the flesh.
3. Significant variability in the form, color, size of fruits and stones was experimentally determined.
4. With the chemical analysis were determined significant differences between genotypes in the content of evaluated chemical components.
5. Flesh composition of cornelian cherry is confirming its high nutritive value for human nutrition and the source of biologically active substances.

Table 1 Statistical variability marker of the evaluated traits of fruits from the collection of cornelian cherry (*Cornus mas* L.) ecotypes

Evaluated traits	n	min	max	x	in %
Fruit weight (mg)	134	0,11	1,44	1,41	33,76
Fruit length (mm)	134	12,99	19,59	15,16	9,61
Fruit thickness (mm)	134	7,43	15,22	10,69	173,52

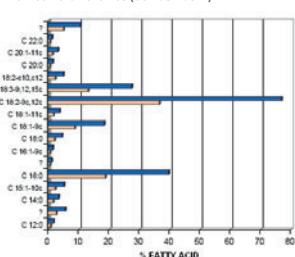
Table 2 Statistical variability marker of the evaluated traits of stones from the collection of cornelian cherry (*Cornus mas* L.) ecotypes

Evaluated traits	n	min	max	x	in %
Stone weight (mg)	134	0,11	0,51	0,25	27,51
Stone length (mm)	134	10,16	15,49	12,34	8,79
Stone thickness (mm)	134	5,14	7,10	6,85	7,38

Table 3 Statistical variability marker of the evaluated traits in the content of macro and micro elements in the flesh from the collection of cornelian cherry (*Cornus mas* L.) ecotypes

Evaluated traits	n	min	max	x	in %
Nitrogen (mg/kg)	134	3151,0	6443,0	4055,67	17,83
Phosphorus (mg/kg)	134	425	785	704,07	25,73
Potassium (mg/kg)	134	7647	20327	13974,74	19,07
Calcium (mg/kg)	134	412	2652	1459,98	22,56
Magnesium (mg/kg)	134	258	1895	850,96	44,42
Zinc (mg/kg)	134	3,3	41	11,58	42,19
Copper (mg/kg)	134	1,2	8,1	12,69	39,35
Iron (mg/kg)	134	6	191	29,76	65,07
Sulphur (mg/kg)	134	386	1645	982,67	24,20
Phenolic (mg/kg)	134	3,43	37,25	11,98	56,55
Dry matter (%)	134	58,5	85	73,93	6,91

Lipid complex of the flesh and stones from cornelian cherries (*Cornus mas* L.).



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