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# *Sorbus domestica*

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## Scientific Name

*Sorbus domestica* L.

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## Synonyms

*Cormus domestica* Spach, *Malus sorbus* Borkh, *Mespilus domestica* All., *Pirus sorbus* Gaertn., *Pyrus sorbus* Gaertn., *Pyrus domestica* (L.) Ehrh., *Pyrus domestica* (L.) Sm., *Pyrenia sorbus* Clairv., *Sorbus edulis* C. Koch ex Kirch.

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## Family

Rosaceae

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## Common/English Names

Beam Tree, Checker Tree, Chess Tree, Service Tree, Service Tree Mountain Ash, Sorb Tree, True Service Tree, Whitty Pear.

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## Vernacular Names

**Croatian:** Oskoruša;  
**Czech:** Jeoáb Oskeruše, Jeřáb Oskeruše, Oskeruše Domáci;

**Danish:** Storfugtetrøn;  
**Dutch:** Peervormige Lijsterbes;  
**Eastonian:** Aedpihlakas;  
**Finnish:** Vaelimeren Pihlaja;  
**French:** Corbier, Cormier, Sorbier, Sorbier Domestique;  
**German:** Hauseberesche, Speierling, Speierling Sperb, Sperbe, Sperberbaum, Zahme, Zahmer Eberesche;  
**Hungarian:** Kerti Berkenye;  
**Iceland:** Betjareynir;  
**Italian:** Sorbo, Sorbo Comune, Sorbo Domestico;  
**Japanese:** Furanso Nanakamado, Nanakamado;  
**Polish:** Jarzab Domowy;  
**Portuguese:** Sorveira;  
**Russian:** Rjabina Domašnaja, Rjabina Krymskaja;  
**Slovaščina:** Mokovec – Skorž, Navadni Skorž, Oskoruš;  
**Slovincina:** Jarabina Oskorušová, Oskoruša, Oskorušina Mukinja;  
**Spanish:** Acafresna, Azarollo Serbal Común, Sorbo;  
**Turkish:** Üvez, Üvez Ağacı.

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## Origin/Distribution

Sorb tree is native to western, central and southern Europe, northwest Africa (Atlas Mountains) and southwest Asia (east to the Caucasus).

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## Agroecology

Sorb tree thrives in most reasonably good soils in an open sunny position. It tolerates light shade, though it fruits better in a sunny position.

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## Edible Plant Parts and Uses

Ripe fruit is eaten raw or cooked. The fruit is usually bletted if it is going to be eaten raw. This involves storing the fruit in a cool dry place until it is almost but not quite going rotten. At this stage the fruit has a delicious taste, somewhat like a luscious tropical fruit. They are processed into pies, liqueurs, cider-like beverage and marmalade. The fruit can also be dried and used like prunes and after drying and grinding is used as ingredient for baking cake. The fruit is also used for making traditional fruit wine: addition of about 5% of sorb tree fruits promotes the clearing and improves the taste of the wine. Because of the high sugar content (up to 12%) fermented fruits can be distilled to a fine brandy called “Sorbetto” in France, “Sperbel” in SW Germany.

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## Botany

It is a deciduous tree growing to 15–20 m tall with a trunk up to 1 m diameter and brown bark which is smooth on young trees, becoming fissured and

flaky on old trees. The winter buds are green, with a sticky resinous coating. Leaves are imparipinnate, 15–25 cm long, with 6–9 pairs of leaflets; leaflets oblong to oblanceolate, 3–5 cm long, 1–2 cm wide, margins serrated, with a bluntly acute apex, lower surface pubescent and becoming glabrescent with age; petiole 3–5 cm long (Plates 2 and 3). Flowers are produced in corymbs, about 15 mm diameter, hermaphrodite, with five white petals, triangular sepals, 15–25 creamy-white stamens and 5–6 styles. Fruit is a pome 2–3 cm long, 2 cm diameter obovoid or pyriform, greenish (Plate 1) or brownish, often tinged red on the side exposed to sunlight, with numerous stone cells.

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## Nutritive/Medicinal Properties

Chemical composition of service tree fruit pulp was reported as follows: protein 0.44–0.65g/kg, lipids (not analysed), reducing sugars 14–16%, fructose 9.40–10.20% total FW, glucose 4.10–5.40% total FW, vitamin C 0.89–0.98mg/kg, vitamin E 1.00–2.35mg/kg (Brindza et al. 2009). Chemical composition of the seeds was reported as: protein 32.9g/kg, lipids 205.3g/kg, reducing sugars 2%, fructose 1.83% total FW, glucose 0.57% total FW, vitamin C < 0.1mg/kg, vitamin E 18.95mg/kg (Brindza et al. 2009). The seeds were found to contain 15.6% cis-10-pentadecenoic acid (15:1  $\omega$ 5, cis), 7.2% palmitic acid (16:0), 3.1% stearic acid (18:0), 28.3% oleic acid (18:1  $\omega$ 9, cis), 33.1% linoleic acid (18:2  $\omega$ 6, cis), and 12.7%



**Plate 1** Immature fruits

**Plate 2** Upper surface of compound leaf



**Plate 3** Leaflets with serrated margins



linolenic acid (18:3  $\omega$ 3, cis). They found that the cation content of service tree fruits was higher than in apples or pears, e.g., there were 3–4 times more potassium and calcium in true service tree fruits.

### Antioxidant Activity

Research reported sorb fruit to be rich in antioxidants. Dichloromethane, diethyl ether and ethyl acetate fractions of *Sorbus domestica* fruits possessed significant radical-scavenging activities (DPPH' and luminol-induced chemiluminescence

methods) which were greater than the activity of Trolox (Termentzi et al. 2006). This seemed to be correlated with their total phenolic content as determined by the Folin-Ciocalteu assay. Unripe yellow fruits, together with the fruit pulp, were the strongest antioxidants, while the well-matured brown fruits were the weakest ones. Results showed that the fractions of diethyl ether, ethyl acetate and dichloromethane, can be used as antioxidants in food and medicinal preparations. In a subsequent research, 62 different phenolics were identified in *Sorbus domestica* fruits (Termentzi et al. 2008b). There were significant qualitative

and quantitative differentiations in the phenolic content among the different maturity stages of the fruits. All stages were rich in benzoic, phenylpropanoic and cinnamoylquinic acids and derivatives. Unripe fruit categories were also rich in flavonoids, while well matured fruit categories had a low content of flavonoids. Fruit pulp, which was proved to be a strong antioxidant, contained very low amounts of both acids and flavonoids, but its phenolic content was highly qualitatively differentiated from the other categories. Egea et al. (2010) found that the hydrogen peroxide scavenging capacity and the Trolox equivalent antioxidant capacity (TEAC) value varied widely for *Sorbus domestica* and *Rosa canina*, ranging between 3.63% and 87.26% inhibition of hydrogen peroxide and between 0.47 and 416.64 mM Trolox/g FW, respectively.

### Antidiabetic Activity

The diethyl ether and ethyl acetate fractions of *S. domestica* fruits possessed high aldose reductase inhibitory activity in-vitro (Termentzi et al. 2008a). Detailed phytochemical LC-DAD-MS (ESI+) analysis showed that this aldose reductase inhibitory activity could be attributed to the high content of flavonoids and hydroxycinnamoyl esters. Aldose reductase (ALR2) is a rate-limiting enzyme in the polyol pathway associated with the conversion of glucose to sorbitol and whose activity is implicated in the development of the long-term diabetic complications.

### Traditional Medicinal Uses

*Sorbus domestica* is one of 126 commonly used traditional medicinal plants in Kırklareli Province, Turkey (Kültür 2007). The traditional medicinal plants have been mostly used for the treatment of wounds (25.3%), cold and influenza (24.6%), stomach (20%), cough (19%), kidney ailments (18.2%), diabetes (13.4%).

After drying and grinding the fruit is also reported to be used in the folk medicine against diarrhoea.

### Other Uses

The bark is a source of tannin. The wood, the heaviest one of the European deciduous trees is very hard, heavy, hard to split, wonderfully coloured, fine grained can be well polished and is in demand under the trade name “Swiss pear tree” and is used for furniture, screws, wine presses etc.

### Comments

The tree is propagated from seeds or cuttings.

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