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New Grape Cultivar 'Narsha': a High Aroma Wine Grape

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Abstract

'Narsha' is a new wine grape cultivar, resulting from an interspecific (*Vitis* sp. X *Vitis amurensis*) cross. It is late-ripening and black-fruited and produces a good quality wine. Its mean date of bud break, at Suwon, Korea is 24 Apr., full bloom occurs on 4 June, and fruit maturity on 21 Sept.. The berries have an excellent taste with abundant aroma and attractive appearance. The mean weight of berries is 3.2 g and mean total soluble solids concentration is 19.9 ºBrix. Although it is cold hardy, 'Narsha' is more suitable to a mild climate. This late-season wine grape produces wines with an attractive character with mid acidity, high tannin content, and a flavor of the parent clone 'Meoru 1' (*Vitis amurensis*).

Materials and Methods

'Narsha' resulted from a cross of 'Alden' X 'Meoru 1' made in 1983 (Fig. 1). This cross was made by the National Institute of Horticultural & Herbal Science (NIHHS) of the Rural Development Administration (RDA), with the intention of producing a large-clustered wine grape with the flavor of *Vitis amurensis*. 'Alden', which has a medium-sized cluster (400 g) and black-skinned berries, was used as the seed parent because of its good taste and fruitful trait while 'Meoru 1' was used as the pollen parent because of its high cold hardiness and disease resistance, and a taste that is preferred by Korean consumers. The original seedling was planted in 1984 and was initially selected as having desirable traits in 1998. Because of 'Narsha's high quality berries, high aroma, cold hardiness, and resistance to powdery mildew, it was propagated for further trials in 2005 under the designation 'Wonkyo Ra-28'. It was evaluated for four fruiting seasons (from 2006 to 2009) in the North (Chuncheon), middle (Suwon, Okcheun), and South (Jinju) regions of Korea. Three vines in three randomized plots were planted for further evaluation. These vines were spaced

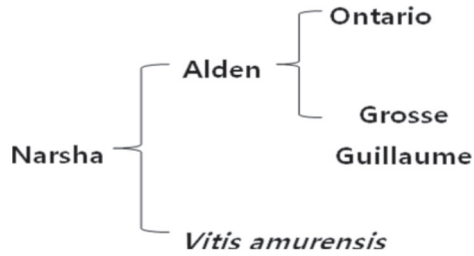

Fig 1. Pedigree of 'Narsha' grape.

4 m (between rows) x 5 m (between plants) and trained to an overhead arbor. Pests and diseases were controlled with periodic fungicide and insecticide applications following the guidelines of the RDA in Korea (RDA, 2003). No irrigation was applied during the six-year evaluation period and weed management was controlled using sod culture. Fruit bearing branches were pruned to two buds in February and cluster thinning was carried out 10 days before flowering. In this trial, the harvest dates were based on fruit maturity, a high soluble solids of over 19.0 ºBrix, low acidity of below 0.8%, and black skin color. A random sample of 5 clusters per vine/replicate was collected for determination of cluster and berry weights. Cluster weight

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was calculated by averaging the combined weights of the five-cluster samples. Berry weight was measured on a 10-berry subsample randomly selected from the five-cluster samples. The five-cluster samples were manually crushed and filtered through a double layer of gauze. Juice soluble solids concentration was measured using a digital refractometer (Atago PR-101, Atago Co., Ltd., Japan) while titratable acidity was measured using an automatic titrator (Schott TitroLine alpha, Mainz, Germany). The juice was titrated to an endpoint of pH 8.2 using 0.1 N sodium hydrogen phthalate. Based on an analysis of observed climate conditions for Suwon during 2006-2009, the average temperate, rainfall and duration of sunshine were 12.2℃, 1,663 mm and 2,152 h, respectively.

Description

Flowers. The flowers of 'Narsha' are perfect, long and have upright stamens. Anthesis occurs in late May (ave. 26 May) after bud break in late April (ave. 24 April) in Suwon, Korea.

Fruits. Berries of 'Narsha' have black skin when fully mature. The skin is medium in thickness and doesn't adhere to the flesh (slip skin). The flesh texture is slightly soft and juicy. Juice soluble solids concentration was usually higher and acidity usually lower than for 'Meoru 1' and the balance between sugar and acidity was excellent. Berries were small in size with an average weight of 3.2 g, and the berry shape is round (Table 1). Each berry averaged two to three seeds of 6.7 mm in length. When the grapes were fully ripened, the aroma of 'Narsha' was similar to that of 'Meoru 1'. 'Narsha' ripened between 17 and 26 Sept. or 4 to 5 d earlier than 'Alden' in Suwon, Korea and needed 2,600 heat units to reach maturity. The mean total soluble solids (TSS) concentration of 'Narsha' was 19.9 ºBrix, or 1.0 to 1.8 ºBrix higher than 'Alden' and its titratable acidity was also higher than 'Alden' (Table 1). It does not quickly lose acidity during ripening. The berries are resistant to cracking following rainfall events near maturity. Although harvest dates were different at different locations within Korea, the fruit characteristics of 'Narsha' were generally similar between Suwon and the other sites (Tables 1 and 2).

Clusters. 'Narsha' clusters were

Table 1. Fruit characteristics of 'Narsha', 'Alden', and 'Meoru 1' grapes evaluated in Suwon, South Korea.

Cultivar	Harvest date	Cluster wt. (g)	Berry skin color	Berry wt. (g)	Soluble solids (°Brix)	Acidity (%)
Narsha	21 Sept.	274±32[z]	Black	3.2±0.3	19.9±1.2	0.8±0.10
Alden	26 Sept.	400±62	Black	5.5±0.5	18.0±1.6	0.4±0.15
Meoru 1	25 Sept.	49.7±8	Black	1.0±0.2	16.3±0.8	1.19±0.35

[z]Mean ± SD.

Table 2. Fruit characteristics of 'Narsha' grape evaluated at three sites within the Republic of Korea.

Cultivar	Region	Harvest date	Cluster wt. (g)	Berry skin color	Berry wt. (g)	Soluble solids (°Brix)	Acidity (%)
Narsha	Chuncheon	20 Sept.	251±40[z]	Black	3.2±0.3	19.2±0.6	0.9±0.35
	Okcheun	15 Sept.	292±21	Black	2.8±0.5	19.7±0.9	0.7±0.13
	Jinju	10 Sept.	227±34	Black	3.2±0.2	18.6±1.3	0.8±0.16

[z]Mean ± SD.

significantly larger than those of 'Meoru 1' ranging from 260 to 290 g with 81 to 91 berries per cluster. Clusters are conical in shape with a middle shoulder and have an excellent appearance (Fig. 2). Berries remain attached to the pedicel during storage and transport. The yield of 'Narsha' was smaller than 'Alden' at the same locations and with the same training system (data not presented).

Vines. The vine of 'Narsha' has medium vigor and is cold-hardy with no bud damage occurring at -15°C in Suwon. 'Narsha' is considerably hardier than 'Alden' and similar in hardiness to cultivars of similar background such as 'Cheangfung', 'Cheangsan', and 'Narae'. Tendrils have branches and develop opposite the leaves. Current season's shoots from dormant buds typically produce inflorescences at the third and fourth nodes. Trunks of 'Narsha' are resistant to damage from low temperatures that may cause trunk splitting or provoke crown gall disease.

Diseases. Foliage and fruit of 'Narsha' are moderately resistant to powdery mildew (*Erysiphe necator* Schw. [syns. *Uncinula necator* Schw.] Burr., *E. tuckeri* Berk., *U. americana* Howe, and *U. spiralis* Berk. & Curt; anamorph *Oidium tuckeri* Berk.) and resistant to downy mildew (*Plasmopara viticola* Berl. & de Toni) and anthracnose (*Elsinoe ampelina* Shear). The trunk is also resistant to crown gall (*Rhizobium vitis* (Ophel & Kerr) Young et al.). Although own-rooted vines of 'Narsha' grape were cultivated in the vineyard, they were not infested with phylloxera (*Daktulosphaira vitifoliae* Fitch [Hemiptera: Phylloxeridae]) owing to the low risk of natural attacks by this pest in soils in Korea.

Wine. A wine sample was first made in 2006 by Grape Research Center, NIHHS in Korea and was rated as being very good. Since that time, samples have been made at Suwon in five successive years and have received consistently high taste panel scores. The samples have been described as pleasant, nicely balanced, with a delicate aroma and fruity flavor, closely resembling 'Meoru 1'. The wine has flavors characteristic of *Vitis amurensis*.

Fig. 2. Fruit of 'Narsha' grape.

'Narsha' is the eleventh table grape cultivar developed by NIHHS in Korea and follows the release of 'Jinok' (3, 4), 'Doonuri' (2), and 'Tankeumchu'(1).

Availability

In April 2010, 'Narsha' became a protected, registered new cultivar in Korea (2010-121). Requests for cuttings for research purposes may be addressed to Jung-ho Noh (jeongho89@korea.kr). Vines are available for sale at the Korean Society for Fruit tree Nursery (4-38 Seonghwang-dong Cheonan, 330-130, Korea).

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