

Influence of UV and Ozonised Water Treatment on *Trans*-resveratrol Content in Berry Skins and Juices of Franc and Green Veltliner Grapes

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ON-LINE SUPPLEMENTARY MATERIALS

DETAILED CONCLUSIONS

Experiments with UV treatment

Trans-resveratrol content

Harvest 2009 – The highest *trans*-resveratrol content was found in the skins of Franc grapes using a UV power of 250 W, for 30 s, followed by storage for 48 hours. No process parameter was identified as statistically significant relative to *trans*-resveratrol content.

Harvests 2010 and 2011 – Storage time and harvest year had a significant influence on *trans*-resveratrol content in the skins of Franc grapes.

All measured parameters had a statistically significant influence on *trans*-resveratrol content in the skins of Green Veltliner grapes.

Harvest 2011 – The juice prepared from Franc UV radiated grapes contained the highest *trans*-resveratrol content at a UV power of 250 W, 30–60 s, followed by storage for 48 hours. Parameters x_1 and x_2 had no influence on the *trans*-resveratrol content of prepared juices but the storage time after treatment (x_3) influenced the *trans*-resveratrol content significantly.

The juice prepared from Green Veltliner UV radiated grapes contained the highest *trans*-resveratrol content at a UV power of 250 W for 30–60 s, followed by storage for 48 hours. The UV lamp power had no influence on the *trans*-resveratrol content of prepared juices but the holding time under UV light and storage time after treatment had a statistically significant influence.

Inhibition rate of antimutagenic activity I, IQ mutagen

Harvest 2010 – Franc grape skins provided an extract capable of very high inhibition rates (mutagen IQ) of around 90% regardless of the UV treatment parameters. The same results were also obtained for Green Veltliner grapes.

Experiments with ozonised water treatment

Trans-resveratrol content

Harvest 2009 – Franc grapes – the highest *trans*-resveratrol content was obtained from grape skins treated with ozonised water with an ozone content of 0.42 ppm or 0.85 ppm, dipping time 10 or 60 min, and stored for 24 or 48 hours. All tested process

parameters (concentration of ozone in water, dipping time and storage time after treatment) influenced the *trans*-resveratrol content in skins.

Harvests 2010 and 2011 – The highest *trans*-resveratrol content was found in Green Veltliner grape skins treated with ozonised water with an ozone concentration of 0.73 ppm for 10 min, and stored for 48 h (harvest 2010). Parameters x_1 , x_2 , and x_3 (ozone concentration in water, dipping time and storage time) had no influence on the *trans*-resveratrol content in skins. However, parameter x_4 (year of harvest) had a significant influence.

The highest *trans*-resveratrol content was found in Franc grape skins treated with ozonised water with an ozone concentration 0.57 ppm for 10 min, and stored for 48 hours. Treatment times of 60 min did not increase the *trans*-resveratrol content, and actually led to a decrease in the content compared to untreated grapes. All process parameters had a significant influence on *trans*-resveratrol content in skins with the exception of storage time (valid for both harvests).

The highest *trans*-resveratrol content in juice prepared from Green Veltliner grapes was found in grapes treated with ozonised water with an ozone content of 3.0 ppm, for 10 min, and stored for 48 hours.

None of the tested parameters (x_1 , x_2 , and x_3) had a significant influence on the *trans*-resveratrol content in juice.

The highest *trans*-resveratrol content in juice prepared from Franc grapes was found in grapes without ozonised water treatment, stored for 48 hours. Only the storage time after treatment (x_3) significantly influenced the *trans*-resveratrol content in juice.

Inhibition rate of antimutagenic activity I, IQ mutagen

Harvest 2010 – Franc grapes – inhibition rates I with mutagen IQ were very high, with values between 80 and 90% regardless of the ozonised water treatment parameters (valid for skin extracts). Green Veltliner grapes – inhibition rates I with mutagen IQ were very high, with values between 80 and 90% regardless of the ozonised water treatment parameters (valid for skin extracts).