

Flavonol Profile as a Sun Exposure Assessor for Grapes

Tech ID: 30064 / UC Case 2018-634-0

ABSTRACT

Researchers at the University of California, Davis have developed a solar radiation assessment method for grapes that uses a flavonol profile. This method can be done using either HPLC or through the computer processing of the absorption spectra of a purified flavonol extract via a purification kit.

FULL DESCRIPTION

Sun exposure is a key driver for profitability in grape production, reducing fungal disease incidence and promoting ripening. However, overexposure can result in damage to the fruit. Current methods of determining sun exposure include directly measuring by placing a large amount of radiometers and data loggers across a field, or indirectly measuring by assessing canopy porosity, density, or size. Both methods are labor intensive and often inaccurate; either because sensors are limited or because canopies are dynamic and sun exposure changes over time. Lab methods for the analyses of grapes use HPLC, which is a technology that wineries have limited access to. There is a need for a sun exposure measurement system that is accurate, easily accessible, and cost effective.

Researchers at the University of California, Davis have developed a solar radiation assessment method for grapes that uses a flavonol profile, a group of plant secondary metabolites responsive to UV radiation. Assessing the naturally-occurring flavonol profile provides an accurate determination of accumulated solar radiation received by a specific grape skin. This method can be done using either existing HPLC technology or through the computer processing of the absorption spectra of a purified flavonol extract via a kit utilizing common winery instruments. This assessment can be done at no additional cost if HPLC technology is already available, and the kit is inexpensive. The assessment of sun exposure through this method allows growers to have a reference of how much solar radiation a batch of grapes has received, and establish a cause-effect relationship between the canopy management operations or variability in weather, and the quality of their wines.

APPLICATIONS

- ▶ Assess the amount of solar radiation received by a particular grape or average exposure of a group of grapes

FEATURES/BENEFITS

- ▶ Can be done either through HPLC or through a low-cost purification kit
- ▶ Quick determinations
- ▶ Simple process compared to current sun exposure assessment methods

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20210333257	10/28/2021	2018-634

RELATED MATERIALS

- ▶ [Martinez-Luscher J, Brillante L, Kurtural S. Flavonol Profile Is a Reliable Indicator to Assess Canopy Architecture and the Exposure of Red Wine Grapes to Solar Radiation. Front. Plant Sci., 31 January 2019. - 01/31/2019](#)

CONTACT

Eugene Sisman
esisman@ucdavis.edu
tel: 530-754-7650.



INVENTORS

- ▶ Brillante, Luca
- ▶ Kurtural, Kaan
- ▶ Martinez, Johann

OTHER INFORMATION

KEYWORDS

Flavonol, flavonol profile,
HPLC, grapes, sun
radiation, sun exposure,
UV radiation

CATEGORIZED AS

- ▶ **Agriculture & Animal Science**
- ▶ Other
- ▶ **Research Tools**
- ▶ Other
- ▶ **Sensors & Instrumentation**
- ▶ Other
- ▶ [Scientific/Research](#)

RELATED CASES

2018-634-0

