



RAPIDASE

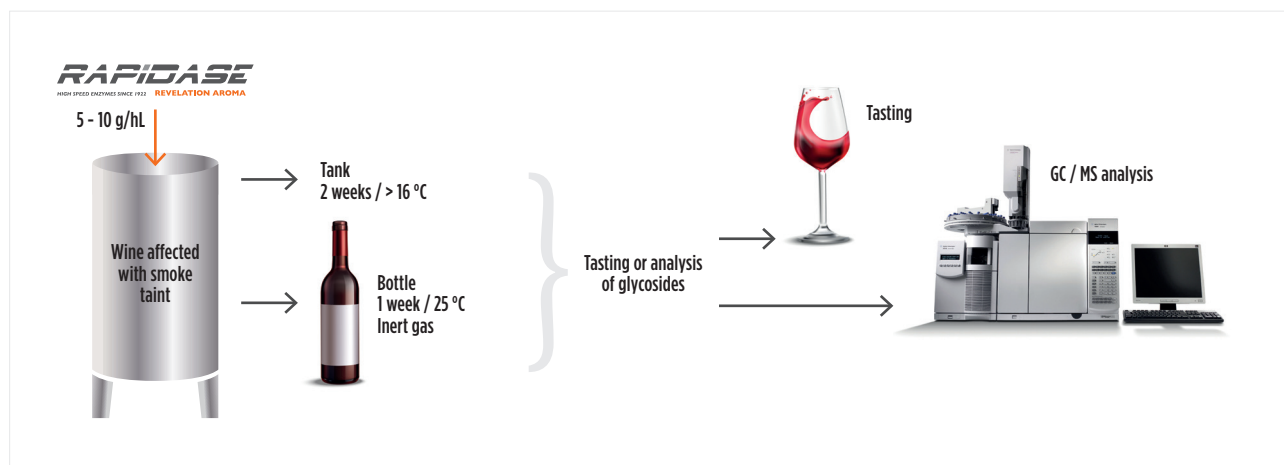
HIGH SPEED ENZYMES SINCE 1922 REVELATION AROMA

HOW TO REDUCE SMOKE TAIN IN CONTAMINATED WINES

1. CONVERT ALL BOUND FORMS OF “SMOKY” MOLECULES INTO FREE FORMS

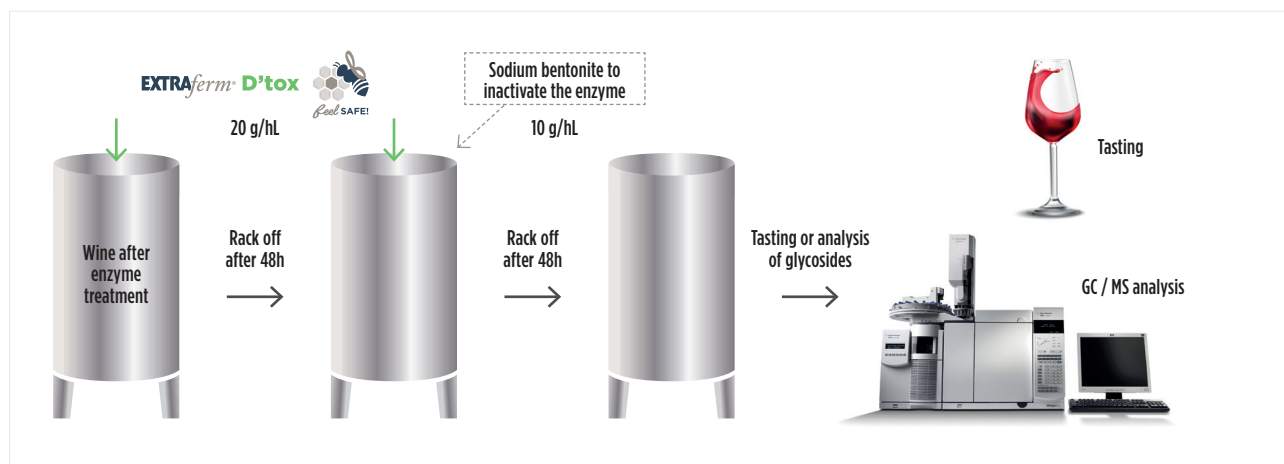
For the smoke taint revelation, we recommend:

- Dose: addition of 5-10 g/hL of **Rapidase® Revelation Aroma**
- Contact time:
 - Minimum 2 weeks in a tank > 16 °C
 - Or 1 week at 25 °C in closed bottles with inert gas
- Treatment evaluation (vs control without enzyme addition):
 - Tasting (easy but not accurate)
 - Free smoke taints analysis (GC/MS analysis in an external laboratory).



2. REMOVE THE FREE FORMS OF “SMOKY” MOLECULES FROM THE WINE

- 2 x 20 g/hL (EU regulatory limit: 40 g/hL)
Treat the wine with **Extraferm® D'tox** in two successive additions at 48h intervals.
- Homogenise/stir, settle and rack off between the two additions.



Extraferm D'tox is a unique & highly adsorbent yeast cell wall for detoxification, which adsorbs and eliminates many toxic and undesirable compounds present in must and/or wine.

BEHIND THE SMOKE...

In the last decade, devastating fires affected viticultural areas all over the world: Australia, California, Chile, South Africa, Portugal and France. Those phenomena appear almost yearly in the Southern Hemisphere and climate change dramatically impacts their recurrence and importance, as seen in Australia in 2019.

For the wine industry, beside the total destruction of vineyards and wineries, the exposure of grapes to smoke and occurrence of smoke taint in these wines, which is considered a negative effect, also leads to economical loss. As an example, the total cost of Californian wildfires in 2017 was estimated at \$180 billion.

Smoke taint in wine is due to the absorption of aroma compounds onto berries and their subsequent transfer to the wine during the vinification. Those compounds are very stable and their sensory contribution is highly detrimental, with smoky flavour and an ashy after-taste.



Smoke over Margaret River vineyard, February 2012.

ABSORPTION ON THE SKIN AND METABOLISATION BY THE GRAPES ...

More than 500 VOCs (Volatile Organic Compounds) have been identified on smoky grapes: hydrocarbons, carbonyls, terpenoids, phenols, etc. Depending on the nature of fuel source (conifers, angiosperms, gramine, etc.). Six different phenols are considered the main markers of smoke taints (**figure 1**).

Their absorption on the bloom of berries is a totally passive mechanism, but once absorbed, some of these compounds

can be metabolised by the grape. An accumulation of glycosylated smoky compounds is observed in the skin of the berries. The ratio between free and glycosylated compounds depend mainly on the period of exposure. Smoke exposure at veraison leads to the highest number of glycosides in comparison to the free forms. Different glycosides are present in smoked grapes: glucosides, diglucosides, rutinosides, rhamnosides and apiosides (**figure 2**).

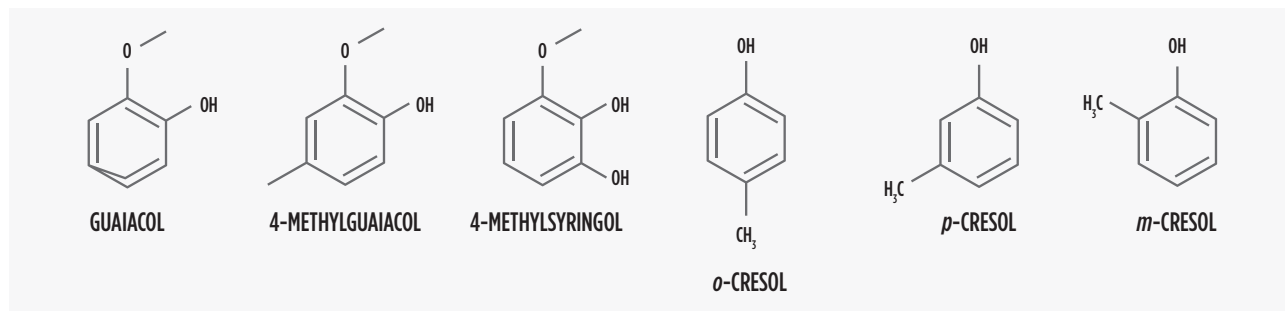


Figure 1. Top six phenols considered as the main markers of smoke taint.

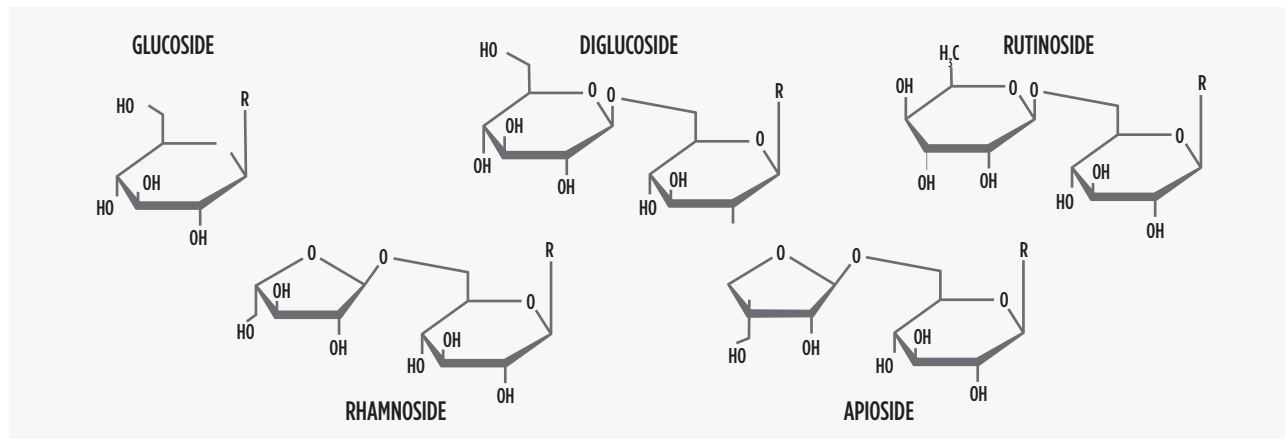


Figure 2. Different glycosides present in smoked grapes.