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# RED WINES AND THIOLS

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Volatile Thiols are organosulfur based compounds, responsible for grassy, boxwood, grapefruit, passion fruit, citrus, white peaches, tropical, guava, .... In red wines, they contribute to blackcurrent, red currant, black berries, red berries and overall freshness of the wine.

Thiolic compounds are present as non-aromatic precursors in the grape skin. These precursors are typically sulfur-containing amino acids, such as cysteine and glutathione.

Both viticultural practices and winemaking techniques can influence the production and expression of thiolic compounds in red wines. Viticulturally, factors such as grape variety selection, canopy management, vineyard microclimate, and vineyard nutrition can impact the levels of thiolic precursors in the grapes.

In the winemaking process, techniques can be used to optimize the extraction of thiolic precursors, the expression of those precursors into volatile thiols and the preservation of thiols.

### FOCUS PRODUCTS

**Excellence B-Nature** – non-Saccharomyces yeast, pure *Metschnikovia pulcherrima*, non fermentative. It inhibits the development of spoilage microbes such as other non-Saccharomyces, and bacteria on grapes and juice. Excellence® B-Nature® is an organic anti-microbial solution, used as alternative to SO<sub>2</sub> on grapes. It protects grapes/juice from microbial contamination during transport and processing, does not inhibit *Saccharomyces cerevisiae*, and reduces SO<sub>2</sub> combining compounds production, thus increasing SO<sub>2</sub> efficiency. Excellence B-nature can be added directly to grapes, without rehydration. Simply sprinkle the yeast on the top of the grapes at picking.

**Oenozym Crush** – maceration enzyme, pectinase, purified in cinnamyl esterase and anthocyanase. Added on grapes, it will improve extraction of skin compounds, such as anthocyanins, condensed tannins, polysaccharides and aromatic precursors and improve free run yield.

**Pro Tannin R** – Pro-anthocyanidin tannin, use as sacrificial tannin. Developed for application on red grapes, to scavenge oxygen radicals, inhibit oxidative enzymes such as laccase and PPO and eliminates reactive proteins, thus protecting grape polyphenols. Pro tannin R is instantaneously soluble, simply sprinkle it on the top of the grapes at picking.

**OptiThiols** – yeast derivatives rich in -SH compounds as thiolic precursors. Its formulation enriches the must of thiolic precursors, used by the yeast during the alcoholic fermentation to synthesize thiolic compounds. The GSH present also allows an anti-oxidant protection of the juice. This double role of antioxidant and aroma revelation helps to increase the wine's aromatic potential, leading to significantly greater quantities of thiols (4MSP, 3SH, A3SH) measured at the end of the alcoholic fermentation.

**Aroma Protect** - inactivated yeasts, naturally rich in glutathione, a natural antioxidant, sulfurous tripeptide with great reductive power. When used during ageing, Aroma Protect® gives immediate protection against the oxidative mechanisms, releasing glutathione (GSH) into the wine, significantly slowing down oxidation phenomena.

**KillBrett** – pure chitosan, wide spectrum anti-microbial agent. KillBrett eliminates and inhibits Brettanomyces, Lactic Acid Bacteria and Acetic Acid Bacteria. It can be used during the entire process of winemaking, we recommend using it as preventive, post MLF, at 4 g/hL.

**Oenozym Thiols** - Used during alcoholic fermentation, ageing and pre-bottling, it expresses the thiolic precursors into volatile thiols such as 4MMP (boxwood) and 3MH (citrus fruit). Used during fermentation, it also increases conversion by the yeast to A-MH (tropical fruits).

**Natur'Soft** - preparation of specific yeasts hulls, selected for their high content of polysaccharides. It is strongly effective in color stabilization, especially for high tannins content wines. Natur'Soft® increases wine complexity, reduces tannins perception, stabilize color and enhances fruity characters.

### WINEMAKING GUIDELINES FOR RED WINES AND THIOLS EXPRESSION

<p><b>HARVEST AND GRAPE TRANSPORT</b></p>	<p>Thiol precursors are in grape skins; therefore, skin contact is highly beneficial. It has been found that the highest concentration in thiolic precursors in grapes is found at night when temperature is cool with no sun exposure.</p> <p>We recommend a gentle extraction of skin compounds with enzyme, such as <b>Oenozym Crush at 30 ml/hL</b> and a protection from oxidation with <b>Pro Tanin R at 150 g/ton</b>, sprinkled on grapes as soon as they are picked.</p> <p><b>Excellence B-Nature at 50 g/ton</b>, sprinkle directly on grapes, as soon as possible after picking to prevent any microbial contamination and spoilage.</p>
<p><b>ALCOHOLIC FERMENTATION</b></p>	<p>Temperature: 72-80°F</p> <p><b>Excellence DS at 20 g/hL</b> to produce fruity, fresh and delicate aromatic profile with smooth structure.</p> <p>Rehydrate yeast with <b>OenoStim at 30 g/hL</b> to reinforce yeast activity, increase aromatic production and optimize grape expression.</p> <p><b>OptiThiols® at 20 g/hL</b> to stimulate thiolic compounds production and increase wine's antioxidant potential.</p> <p>1DAY AFTER INOCULATION</p> <p>Ensure good yeast nutrition and limit off-flavors production with <b>Optiflore O® at 40 g/hL</b> (complete organic nutrient based on inactivated yeast).</p> <p><b>180 g/ton</b> of <b>Natur'Soft</b> to stabilize color, fill mid palate, and increase wine volume.</p> <p>Ensure good yeast nutrition and limit off-flavors production with <b>Optiflore O® at 40 g/hL</b> (complete organic nutrient based on inactivated yeast).</p> <p>AT 18 BRIX FERMENTATION</p> <p>If low initial YAN (&lt;150), add <b>20-30 g/hL</b> of <b>OptiFerm</b> (ammonium salts and vitamin B1).</p> <p>To boost expression to thiolic precursors, use <b>Oenozym Thiols</b> at 3 mL/hL.</p>
<p><b>MLF</b></p>	<p>Co-inoculation: add <b>Oeno1 at 1g/hL</b>, 1 day after AF starts to keep fresh, fruity profile.</p> <p>Sequential inoculation: add <b>Oeno1 at 1g/hL</b> after AF is completed for more complex profile.</p>
<p><b>AGEING</b></p>	<p>Once AF and MLF completed: rack off gross lees after fermentation. Use inert gas during transfer.</p> <p><b>Aroma Protect at 10 g/hL</b> to reduce redox potential and increase natural wine resistance to oxidation.</p> <p><b>Tan&amp;Sense Volume at 1 g/hL</b> every racking to protect from oxidation and scavenge oxygen radicals.</p> <p><b>KillBrett at 4 g/hL</b> to prevent any microbial development and protect wine from spoilage.</p> <p>To increase expression to thiolic precursors and boost freshness in wine, use <b>Oenozym Thiols</b> at 6 mL/hL at least 1 month before bottling. Ask Us for Samples.</p>