Palate Tune-Up

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Malic acid, tartaric acid, TCA, brett…

You know the words, but can you recognize them in wine?

If you're not sure, perhaps you need a tune-up!

This session, led by SWE's Director of Education, Jane A. Nickles, CWE, will take a look at how we actually taste wine, the building blocks of wine flavor (alcohol, acid, tannin, residual sugar), some of the things that can go wrong with wine (TCA, brett, oxidation, ethyl acetate), and some of the aspects of quality wine as well.

You'll be faced with a line-up of doctored wines, but will taste some excellent wines as well. At the end of the session, you will emerge with a finely honed, "tuned-up" palate!

Base Wine

Visual:

- Note the color and color intensity.
- Take a very good look at the nature of the tears.
- Keep in mind that as the altered/faulty wines are compared to the base wine, the base wine's color and the nature of the tears will provide some good points of reference.

Aromas:

- Note the aromas you sense, and don't forget to note where or when in the tasting process you are best able to sense them.
- It may help to keep in mind that when assessing wines for faults or imbalances, we will be looking for how the altered wines differ from the base wine.

Palate:

- Be sure and note where exactly on your tongue you detect acidity, and how long the taste/tactile sensation of the acidity lingers.
- Note whether or not you detect any bitterness on the back of your tongue, and its length.
- Note how the sweetness (or, lack of it) hits your palate.
- Describe the body and texture of the wine.
- Note the flavors of the wine at the mid-palate and finish.

Other Observations:

Tartaric Acid Imbalance

While there are many acids present in wine, tartaric acid is one of the more dominant, strong, and stable. Tartaric acid is rather rare in fruits besides grapes, but is naturally present in small amounts in cranberries, cherries, lemons, limes, and grapefruit. You can "experience" the unmistakable "zing" of tartaric acid in under-ripe grapes, New Zealand Sauvignon Blanc, or grapefruit juice.

Visual:

- You may find no visual differences between the altered wine and the control wine.

Aromas:

- Note if you find any differences in aroma between the wine altered for acidity and the base wine.
- If there are no aromatic clues, don't worry…this component shows mostly on the palate.

Palate:

- The wine altered for tartaric acid may taste noticeably sharper than the control wine.
- You should also notice the tactile differences. You may sense a very noticeable acidic "tingle" sensation over the top/middle of the tongue that was not present in the base wine.
- Note how the acid hits the side of your tongue; you may notice it hits much "harder" than the control wine.
- The taste and feel of the acid may also linger much longer after sipping/spitting than the control wine did. The finish may leave a dry, astringent sensation on the middle of the tongue.

Other Observations

Malic Acid Imbalance

Malic acid is one of the main acids found in wine grapes, and therefore, in wine. Malic acid is found in many types of fruit, including apples, pears, cherries, nectarines, and peaches, and is often associated with the lively “snap” of a ripe green apple. Levels of malic acid are typically highest in under-ripe grapes and grapes grown in cool climates/vintages. The level of malic acid decreases during the ripening phase of grapes on the vine, particularly in warm areas; the rate of this process increases proportionally as the temperature rises. Despite the condition of the grapes, as we all know, the level of malic acid in a finished wine can be influenced by the winemaking process.

Visual

- You may find no visual differences between the altered wine and the control wine.

Aromas

- You may find a slight but distinct hint of sour-candy green apple aroma (think “green apple Jolly Ranchers”). Note that this is not a fresh fruit aroma, but a distinctly “artificial” green apple scent.

Palate

- You may notice a fairly harsh, hard acid feeling and sensation on the top and sides of your tongue, and maybe even a bit underneath the tongue.
- This wine had more of a chemical, artificial taste sensation than the wine altered for tartaric acid.
- The artificial green apple taste/flavor carries over to the palate.

Other Observations

Tannin Imbalance

The grape tannin component of the altered wine has 400 ppm of tannin. This is about twice the detection level of a normal taster. As a matter of fact, this component will alter the appearance of a white wine, and as the SWE test currently uses a white wine as the base wine in its exams, if you are taking the CWE anytime soon, you should be able to pick the wine altered for tannin just by sight. Otherwise, note the level of astringency and bitterness provided by the added tannin. Keeping in mind that this wine is altered with grape tannin, note where the sensation hits your palate – as in more towards the front or more towards the back – or equally in both spots.

Visual:
• The wine altered for tannin will have an obviously darker color than the control wine.

Aromas:
• The obvious darkened hue of the wine altered for tannin makes it hard to be objective, but you may not notice any aromatic differences between this wine and the control wine.

Palate:
• The bitterness, astringency, and slight textural “drying” sensation of this altered wine are hard to miss. • Note where on your palate you most feel the sensation of the tannin.

Other Observations

Sugar Imbalance

The wine altered for sugar has a residual sugar level .8% *higher* than the base wine. As the dry base wine had ~ .3% residual sugar, the altered wine has approximately 1.1% residual sugar. The average recognition threshold is 1.0% for sugar in wine, so you may or may not be able to actually taste the sweetness in the altered wine. If you cannot detect the actual sweetness, look for a pleasant, slippery mouth-feel and a lessening of your perception of the acidity in the altered wine.

Visual:
• You may note that the wine altered for sugar produces thicker (and fewer) "rivulets" than the control wine and that they fall into the glass more slowly.

Aromas:
• The wine altered for sugar may smell richer and display "riper" fruit aromas than the control wine, but will most likely not display any aromas that could otherwise be described as "sweet" or "sugary" on the nose.

Palate:
• Depending on your recognition threshold, the wine altered for sugar may taste somewhat sweeter than the control wine. • The more obvious contrast should be the mouth feel. The altered wine has a richer, smoother mouth feel. • Also notice if the altered wine seems less acidic than the control wine.

Other Observations

Alcohol Imbalance

The altered wine is .5% higher in alcohol than the base wine. To identify a wine that is out of balance for alcohol, look for something akin to a heat-driven tickle in your nose. A high level of alcohol in a wine will also make your mouth feel warmer than it did before you sipped the wine. It is commonly thought that alcohol has a sweet taste to it, but this is only true for some people. Added alcohol will create an oily, viscous sensation in the altered wine as compared to the base wine. Remember that you are not supposed to overtly notice the alcohol in an unfortified wine; it should play more of a "supporting role" in the flavor profile of a quality wine.

Visual:
• You may notice that the wine altered for alcohol has longer or slower tears than the control wine.
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Aromas:
• You may notice that the wine altered for alcohol had a different scent than the control wine. It may be described it as slightly more chemical and decidedly less fruity than the control wine. • You may also notice a sight burning sensation in the nostrils.

Palate:
• The wine altered for alcohol may seem to have a slightly more bitter taste than the control wine. • The main difference will likely be how the warmth and bitterness lingers on the finish, primarily on the back of the throat.

Other Observations

Ethyl Acetate

Ethyl acetate is formed in wine through a reaction of alcohol and acetic acid. Wines with high levels of acetic acid are likely to see ethyl acetate formation. Ethyl acetate may also be produced via the action of lactic acid bacteria and acetic acid bacteria. The sensory threshold for ethyl acetate is 150–200 mg/L. Levels below this can give added richness and fruity aromas to a wine, however, levels above the threshold are generally considered a flaw or fault. High levels of ethyl acetate may show as an unpleasant aroma of nail polish remover, airplane glue, or varnish; and has often been described as “vinegary canned pears” or “pear gummy candies.”

Visual:

- You may find no visual differences between the altered wine and the control wine.

Aromas

- The fruity aromas of the altered wine may seem a bit obscured by the ethyl acetate, even though it may not have a distinct “nail polish” aroma. The aromas may instead seem more chemical, mineral, or spicy.
- You may notice a slight chemical “burn” in the nostrils.

Palate

- You may find that the wine tastes a bit vinegary, create a bit of a burning on the lips, and shows a slight “deadening” of the flavor overall.
- The distinct “acidity” of the wine may be lessened, but it might be replaced with a metallic bitterness across the back of the tongue and palate.

Other Observations:

Sulfur Dioxide

Sulfur dioxide, in small amounts, is a natural byproduct of winemaking. It can also be created via the use of potassium metabisulfite, a common additive used during the winemaking process for its antioxidant and preservative properties. When overdone or out of control, sulfur dioxide can cause a wine to smell of matchsticks, burnt rubber, or mothballs. These off-aromas may also be accompanied by a stinging sensation in your nostrils.

Free sulfur dioxide may be detected at 60 ppm; at around 100 ppm it stings the nose and smells like matchsticks. At about 150 ppm the wine becomes undrinkable. If you taste a wine faulty in sulfur dioxide, expect a harsh, bitter, metallic sensation on the palate. Consider yourself warned!

Visual:

- There may not be any visual clues to differentiate the altered wine from the control wine.

Aromas:

- The "burnt match" aroma typical of sulfur dioxide is the main clue to this fault. Even if this scent is seems subtle and not at all overpowering; it may in effect “dumb down” all of the wine’s other aromas and stand alone as the only scent to be found in the glass.
- You may also notice a stinging sensation in the nostrils.

Palate:

- This wine might not even taste like wine but may remind you more of “aluminum foil on fire.”
- It’s harsh, somewhat stinging, bitter, and metallic. But have no fear; the aroma is quite obvious so you don’t have to taste it if you don’t want to!

Other Observations

Volatile Acidity

Volatile Acidity (VA) includes all the acids that can "vaporize" at room temperature. VA does not include "fixed acids" that give structure to a wine such as malic acid and tartaric acid. While there are a number of wine acids that are volatile, the most prevalent one in wine is acetic acid, which accounts for over 95% of any VA measurement. Volatile Acidity may be caused by bacteria gone wild, but it is also a minor by-product of some yeasts and fermentation.

To put VA in context, table vinegar has about 5% (50 g/L) acetic acid. The typical recognition threshold for VA in wine is about 0.6% (6 g/L). The fault can be described as having a slightly sweet and frankly vinegary aroma and taste. It is particularly noticeable in the aftertaste - unfortunately, it tends to linger.

Visual
• You will most likely find no difference in the hue or color of the altered wine versus the control wine; you may, however, notice a difference in the behavior of the tear. I have had a few samples sheet down the side of the glass without "breaking" into rivulets.

Aromas
• You may notice a subtle (yet still unmistakable) whiff of pure white vinegar aroma, particularly above the glass and near the top rim of the glass.

Palate
• The "vinegary" aroma becomes very apparent as you tip the wine into your mouth; it may also taste a bit astringent, and have a hard – and lingering - vinegar "bite" across the top of your tongue.

Other Observations:

Oxidation

Oxidation is perhaps the most common of the wine faults, as the presence of oxygen and a catalyst are the only requirements for the process to occur. If you are a fan of Madeira or Sherry, you are familiar with the apple-cider aromas of acetaldehyde, a byproduct of oxidation. White wines that have experienced excessive oxidation lose their fresh, fruity aromas and become flat. They will also start to lose color integrity and turn brown.

If you have ever opened a bottle of wine, served most of it, re-corked it, put it in the fridge, and tried to drink it three days later, you have already experienced the effects of oxidation. It's the same wine, just flatter, staler, and more astringent.

Visual:
• You might notice a slight color variation between the control wine and the oxidized wine. The oxidized wine may appear slightly darker.

Aromas:
• The wine altered for oxidation should have a recognizably different scent than the control wine. • It may show an apple-cider scent or an odd "sweetness" on the nose. • It may also remind you of fino Sherry or smell strongly of wood.

Palate:
• Look for a sharp, woodsy flavor and a lingering bitterness that may be felt on the top of the palate and in the middle of the tongue.

Other Observations

Cork Taint

Cork taint is so-called due to the fact that its chief cause is the presence of 2,4,6-trichloroanisole (TCA), and/or 2,4,6-tribromoanisole (TBA), in a wine, having been transferred there from the cork. However, it is now known that it can be transferred through the cork from the environment, as well as originate from a variety of sources.

Wine affected by cork taint has a characteristic odor, variously described as resembling a moldy newspaper, wet dog, damp cloth, or damp basement. A wine with a minor TCA issue will have its natural aromas significantly reduced; in these examples, it may be difficult to recognize cork taint. You might just find the wine uninteresting, or, if you are familiar with it, it might "just not taste quite right." Extreme examples can render a wine unpalatable. TCA is tricky – the detection threshold for humans is measured in the single-digit parts per trillion.

Visual
• There may not be any visual clues to differentiate the altered wine from the control wine.

Aromas
• It should be obvious that the fruity aromas are gone, only to be replaced by an odd aroma of shoe leather, wet dirt, stale and wet newspapers, and yes…the dank, damp basement.

Palate
• Let's hope we all learn to recognize cork taint by smell, as the taste of such a wine is memorable indeed (and not in a good way). Look for a total lack of anything reminiscent of the fruity, complex flavors of wine, and in its place – a sharp, metallic, monotone taste and flavor that just won't stop.

Other Observations:

Brettanomyces

Brettanomyces is a type (actually, several related types) of yeast. Brett is a complex subject indeed, as it is one of those "flaws" that can, in some contexts and by some people, be considered as a positive. If we believe everything we read, there are even some highly regarded wines that owe some of their "character" to brett.

Among the first signs of brett, hints of smoke, leather, and spice may appear – this is the part that some consider acceptable or even a positive. However, these signs may be followed or accompanied by reduced varietal character as well as a dumbing-down of fruity aromas and flavors. If brett spreads unabated, it can create aromas described as medicinal, barnyard, metallic, compost and Band-Aid – which (almost) nobody likes.

Visual
• There may not be any visual clues to differentiate the altered wine from the control wine.

Aromas
• You may immediately notice the tell-tale signs of brett – look for a sweaty, horsey, plastic, and yes…Band-Aid aroma.

Palate
• Unfortunately, it tastes the way it smells. The wine's natural tastes and flavors are wiped away, replaced by sharp, bitter, plastic flavors and a burning, stinging sensation that lingers, particularly on the top of the tongue and palate.

Other Observations: