

Snow on Wine

“What is acid” ask Adam? “Bite this, your mouth will water,” said Eve.



If there were “Granny Smith” apples in Eden, that would be the mouth feel and taste which wine aficionados (i.e. snobs) refer to when they say a wine has great acid. In general, that mouthwatering sensation (which Adam couldn’t resist) is a good thing. But like all good things, it can be over or under done.

Last month we learned that as grapes grow, acids accumulate until Veraison, and then acids begin to decrease as sugar accumulation dominates until full ripeness. Acid is essential to give balance to sugar and to alcohol, and there are several organic acids in play here. Wines of the best vintners have the right acids, in the right amounts and the right proportion. In every vintage, for each wine type, and for each vintner’s style, a unique acid profile is demanded.

So what acids are in grapes? Wide agreement exist that **tartaric acid** and **malic acid** are the principle ones. Small amounts of **citric** and **succinic** acid make up the rest of what is called fixed acidity. **Acetic acid** is the main volatile acid, and together the fixed and volatile acidity make up the total acidity.

We rarely hear about **tartaric** acid, possibly because it’s so stable during ripening -- the stalwart soldier of acidity. **malic** acid however decreases during maturation, often too quickly and unpredictably if temperatures soar as harvest approaches, so we hear a lot about it. **Malic** acid takes its name from the Italian word for apple, “la mela,” and is peculiar being a “double acid” with two rather than one acid groups. When it is abundant vintners may seek to reduce its doubly sharp acidity with a secondary bacterial fermentation.

And that leads the discussion to **lactic** acid, famous for the rich unctuous buttery flavor it lends to barrel fermented Chardonnay. Up to now, **lactic** acid hasn’t been mentioned because it is not in the grapes. In secondary malolactic fermentation, bacteria eat **malic** acid and “poop out” **lactic** acid, water and CO₂. With only a single acid group, **lactic** acid is smooth, less sharp and has a notable buttery tone.

By contrast, Chardonnay produced with stainless steel tank fermentation and no malolactic secondary fermentation is crisp, clean, apple-like and mouthwatering (so said Eve). Tasted side-by-side the difference between **malic** and **lactic** acids is clearly seen. It is also worth noting that almost all red wine goes through secondary malolactic fermentation while in the barrel, helping to smooth and soften the wine on the palate.

Some other acids may be found in wine and are either added by winemakers or result from bacterial action. After primary fermentation, wine with inadequate acid may be “improved” by adding **citric** or **tartaric** acid. **Ascorbic** acid (vitamin C), is sometimes added instead of sulfur dioxide as an antioxidant. **Sorbic** acid may help preserve against fungi and may give some sweetness but often leads to a rancid off taste. When bacteria produce **butyric** acid a rancid butter smell results. **Acetic** acid and its vinegar smell come acetobacter converting ethyl alcohol in the presence of oxygen. But in small amounts both **acetic** acid and **succinic** acid from the grapes can form esters with ethanol which have fruity and flowery flavors and can be pleasant.

But in most wine, acid is all about the reliable **tartaric** acid quietly supporting the core of acidity, and tart crispness of **malic** acid or the broad soft buttery taste and feel of lovely **lactic** acid.