British Columbia Guild of Wine Judges
Monthly Training Program

BRITISH COLUMBIA
GUILD OF WINE JUDGES

"WITH SKILL AND INTEGRITY"

Different types of acids in wine - Rev 1

Malic Acid

It is present in grapes and in most wines with concentrations sometimes as high as 5 g/l. It contributes a tart taste to wine, although the amount decreases with increasing fruit ripeness. The taste of malic acid is very clear in rhubarb where it is the primary flavor. It is also the dominant acid in blackberries, apples and pears.

Tartaric Acid

Tartaric acid is, from a winemaking perspective, the most important acid in wine due to the prominent role it plays in maintaining the chemical stability of the wine and its color, and finally in influencing the taste of the finished wine. In most plants, this organic acid is rare, but it is found in significant concentrations in grapes. Along with malic acid, and to a lesser extent citric acid, tartaric is one of the fixed acids found in wine grapes. The concentration varies depending on grape variety and the terrior of the vineyard. Some varieties, such as Palomino, are naturally disposed to having high levels of tartaric acids, while Malbec and Pinot Noir generally have lower levels.
Tartaric acid can precipitate out of a finished wine in the form of crystals. The crystallization of these tartrates can happen at unpredictable times, and in a wine bottle may appear like broken glass, though they are in fact harmless. Winemakers will often put the wine through cold stabilization, where it is exposed temperatures below freezing to encourage the tartrates to crystallize and precipitate out of the wine. Tartaric acid can easily be removed from wine if it is excessive.

Citric Acid

While very common in fruits such as limes, lemons, kiwi, grapefruit, pineapple, orange and some berries, citric acid is found only in very minute quantities in wine grapes. Citric acid is sometimes added to a white wine to boost the citric flavors already present in some white wines. When citric acid is added, it is typically done after primary alcohol fermentation has been completed due to the tendency of yeast to convert citric into acetic acid. The one exception would be in chardonnay where the winemaker

may wish to increase the amount of diacetyl from a ML fermentation. Excess citric acid cannot be removed from wine.

Acetic Acid

Acetic acid is produced in wine during or after the fermentation period. It is the most volatile of the primary acids associated with wine and is responsible for the sour taste of vinegar. During fermentation, activity by yeast cells naturally produces a small amount of acetic acid. If the wine is exposed to oxygen, *Acetobacter* bacteria will convert the ethanol into acetic acid. This process is known as the “acetification” of wine and is the primary process behind wine degradation into vinegar. An excessive amount of acetic acid is also considered a wine fault. A taster's sensitivity to acetic acid will vary, but most people can detect excessive amounts at around 600 mg/l. Small amounts, below the detection level, is said to “lift a wine” and add to its complexity.

Lactic Acid

The process of malolactic fermentation converts malic acid to much milder lactic acid. Malic acid occurs naturally
Malic acid can be further reduced during the winemaking process through malolactic fermentation or MLF. In this process, bacteria converts the stronger malic acid into the softer lactic acid. After MLF, wine has a higher pH (less acidic), and a different mouthfeel with more body.

Exercise

This is an exercise to demonstrate how different acids taste.

Solution 1 - Malic Acid - 3 grams (½ tsp) per 750 ml of water

Solution 2 - Tartaric Acid - 3 grams (½ tsp) per 750 ml of water

Solution 3 - Citric Acid - 3 grams (½ tsp) per 750 ml of water

Solution 4 - Acetic Acid - 75 ml of 5% vinegar per 750 ml of water

Solution 5 - Lactic Acid - 3 grams (½ tsp) per 750 ml of water