



# Wine instabilities - the solids won't hurt you

A range of hazes and deposits can form in wine and these can sometimes cause concerns for consumers. The AWRI helpdesk has recently received queries asking if there are any health risks associated with consuming wines affected by hazes or deposits. This column discusses the common instabilities seen in wine and provides reassurance that they do not pose health or safety risks.

## What are the most common instabilities found in wine?

Hazes and deposits in packaged wine consistently make up around 40% of investigations conducted by the AWRI helpdesk. The majority of these are protein, tartrate crystals and wine yeast/bacteria.

## Grape protein hazes in wine

Wine-grapes contain proteins that persist through the winemaking process and can cause hazes in finished wine. Wineries usually prevent protein hazes by using bentonite fining to remove most of the haze-forming proteins from wine prior to bottling. In some cases insufficient fining can result in residual soluble grape proteins remaining in wine, or late copper additions to wine before bottling can result in formation of a copper-protein complex, which can come out of solution and form a haze once the wine is bottled. Similar to those in cloudy apple and pear juices, or cloudy beers and ciders, the 'solids' simply affect the appearance and texture of the product consumed. These types of proteins are non-toxic and non-allergenic, and are found in other fruits and vegetables. While a protein haze, particularly in white wine, may not look attractive, it poses no risks to human health.

## Tartrate crystals

Crystals of potassium bitartrate (KHT) are one of the most common deposits found in wine. Grape juice naturally contains both potassium and tartaric acid, which associate together to form KHT crystals. After fermentation, when wine becomes saturated with KHT at levels greater than its solubility in an ethanol/water solution, it drops out of solution as crystals. To a consumer, KHT crystals might look like small glass shards in white wine. In red wine, they are usually dark red in colour and could be mistaken for residual colour, tannin or even pieces of oak/wood. These crystals often dissolve upon touch, or, if consumed, present as a gritty texture. Crystals of calcium



tartrate can also form in some wines with high calcium levels. Being non-toxic and non-allergenic, tartrates are actually commonly used as food additives (such as cream of tartar used in baking) and pose no health risks if consumed.

## Yeast and bacteria

Yeast and bacteria are commonly found in deposits in wine, due either to insufficient filtration or yeast and bacterial growth in wine post-bottling. Fortunately, the pH, sulfite and alcohol conditions typically found in wine make it an environment that is extremely hostile to food-borne pathogenic organisms, ensuring wine presents a low risk to health from a microbiological perspective. The most common microorganisms detected in packaged wine are the yeast that conducts wine fermentation, *Saccharomyces cerevisiae*, which is also used in baking and brewing, and the bacteria that conducts malolactic fermentation, *Oenococcus oeni*. These organisms are not harmful to humans when consumed. It is also unlikely that wine consumers with an allergy to baker's yeast will react adversely to wine, bread or beer, because generally such allergic

reactions occur following inhalation of yeast in its aerosolised form rather than from consuming foods or beverages made with the microorganism. Natural wines, or deliberately unfiltered and unfinned wines, often contain residual yeast lees to aid in wine texture. Many other food products also contain microbiological species, such as yoghurts or probiotic milk drinks.

## Fining agents

Different types of fining agents can be used when clarifying wine. Many of these are proteins derived from egg, fish, gelatine or milk and as such have potential to cause allergic reactions in some consumers. Research has shown that Good Manufacturing Practice ensures that minimal residual protein remains in the final wine, at amounts not associated with adverse reactions in food allergic consumers. When making wines suitable for vegans, winemakers can now choose plant-based clarifying agents instead of animal-derived products.

*For further information about deposits in wine or any other technical matter, please contact the AWRI helpdesk on (08) 8313 6600 or email [helpdesk@awri.com.au](mailto:helpdesk@awri.com.au)*