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Aspects of the Influence of Filtration on Qualitative and of Composition of White Wines

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Abstract. After the nature of the material that goes into their composition the filter media include: pulverous, fibrous, fabric filters and filter membrans. pulverous filter media consist of diatomite (kieselguhr as a heat-treated diatomite), perlite or mixtures shall be deposited by alluvial and alluvial pre-filter elements on the surface. Filter media are crossed by a system of channels, random shapes with very small diameters, separated by a solid skeleton. Filtering is one of the oldest methods of clarifying wines but as improving the porous filter media, filtering technology has become an important method to stabilize wines (Serrano and Paetzold, 1994). Depending on porosity membranes, filtering can also ensure the microbiological stabilization of wine. Passing through the membrane does not affect wine quality, giving them the opportunity for reuse. Filtering ensures good stability and clarity of wines. Wine clarification by sedimentation during unduly prolonged technology and filtering ensures rapid separation (streaming) of wine. When filtering wine through porous layers, the particles in suspension to be involved in yeast sediment deposited in the bottom of the container and which could have a favorable role on wine olfacto-taste) may be retained on the surface or depth filter layer so that wine passing through filter surface should not affect its sensory qualities.

Keywords: filtration, kieselguhr, granulation, wine composition, sensory attributes.

INTRODUCTION

When filtering wine through the filter media with different granulosity, the particles causing slurry may be retained on the surface of the filter medium or in its depth. Slurry particles with a diameter greater than the filter material, are retained on the surface of filter layer (forming a second layer of filter). Particles with diameter smaller than the diameter of the filter material are retained in the filter layer depth due to adsorption processes and making mechanical particles in the filter layer. After adsorption, the particles are fixed on the surface due to electric charges kieselguhr granules of opposite sign. So what causes slurry particles, even if smaller than the grains forming the filter are retained by adsorption. Retention of particles to determine the slurry by adsorption provides good clarity early in filtering wine. Disorder wine during filtration due to saturation of the environment that causes slurry particle filter. Another phenomenon that causes retention of slurry particles in the environment is incorporating mechanical filter. Mechanical embedding occurs due to irregular grains forming environment kieselguhr filter. Pores of different sizes are created a route as well as a sophisticated filtering route. With environmental filter clogging is likely to release particles that cause slurry filtered wine. We recommend choosing a technology for clarification and stabilization of wines involving as small a number of treatments, and filtering. Increasing the

number of filtering can cause aggregation of possible negative effects that can affect both the composition and sensory profile of wine filtered, and also not recommended wines with alluvial filtration of graded fine kieselguhr filtration before his plate because the operation is practically useless (Ribereau-Gayon *et al.*, 2004).

MATERIALS AND METHODS

The research was carried out on a lot of white wine from Muscat Ottonel the harvest of 2010 coming from Vrancea area, the village Slobozia tree. The grapes were hand harvested in late October to over-ripening of clusters and mechanically crushed, macerated on beeswax with ZYMOCLAIRE MUSCAT, prepared enzyme extraction odorant precursors variety and effective clearing of musts rich in pectin branched recommended clarification of musts varieties rich in pectin from highly branched varieties such as Muscat, Gewürztraminer, fat, incense, from crops harvested from over-ripening. Enzyme preparation was administered at 3g/100 kg. must. Due to high content of pectin-lyase in activity, enzyme preparation extraction of flavor precursors combines the varietal in the skin with the ability to hydrolyze pectin existing branch in musts treated as fully developed in the degradation of pectic macromolecule chain, to ensure a quick debourber of the must.

Must clarification efficiency and speed of the enzyme preparation, allows obtaining a fine wine with remarkable taste and smell an intense and expressive character, that improves filterability equally. After completion of the maceration the mustification was pressed with a hydraulic press to moderate pressure to avoid enrichment must in compounds to affect quality. Must release was sulphites with 10g / l SO_2 and underwent debourbering gravity for 36 hours at a temperature of 9°±2° C. Deboubered must was seeded with Fermactiv Muscat, a strain of yeast selected with special variety flavors revealing enzyme preparation for wines from Muscat Ottonel. Alcoholic fermentation was conducted at a temperature of 14±2° C. under laboratory conditions. To stimulate the biological activity of yeast, grape sown the seeded must was treated with bio-fermentation activator Enova, a dose of 25mg /l.

To strengthen the effect of fermentation, wort was oxygenated with a microdoză of 5mg /l. oxygen. This product increases air resistance and stimulates the formation of wine aroma volatile compounds (esters, acetates), which emphasizes the qualities of wine olfacto-taste. When the density reached a fermented mash de1045 g/l, the seeded must was treated with Fermoplus Integrateur at 30 mg /l. This product enhances metabolic activity of yeasts during the last stage of fermentation of a wine production ensuring quality, preventing excessive extension the fermentation, with direct implications on the content of residual sugar and volatile acidity. Alcoholic fermentation was stopped at a sugar content of 12 g/l.

After cessation of alcoholic fermentation (and peace of wine) I made a transfuse open, I checked the air quality and resistance to sulphite wine with 30mg /l. SO_2. After two weeks the wine was filtered in the laboratory through a grainy filter Kieselgur of the following: 2.3, 0.8 and 0.35 Darcy. Witness sample of wine and wine samples filtered by the methods listed were kept in glass vessels with a capacity of 25L. tightly closed to prevent unwanted oxidation at a temperature of 16° ± 2° C and were analyzed after 3 days of sensory processing and after a month. For samples and blank filters were subjected to spectofotometrical analysis. Optical density, tannins and total polysaccharide content were determined by the spectofotometricalmethod at different wavelengths (420, 475, 560 nm.). In glass or quartz cuvettes with 1 cm optical path. Higher alcohols, higher alcohols acetates, fatty acids and total esters of fatty acids were isolated by liquid-liquid extraction methods and weight by gas chromatography method (Ţârdea, 2007).

RESULTS AND DISCUSSION

To have a uniform witness to come out the same basic technology has undergone operations of different grains kieselguhr filtration described above. The main characteristics of wine composition witness were: 10.5% vol alcohol dispenser, 12.56% total vol, 3.1 $C_4H_6O_6$ total acidity, 0.29 g /l $C_2H_4O_2$, volatile acidity, 2.81 g /l H_2SO_4 acidity, density 1.005 g/cm3 at 20° C 12.39% vol alcohol, 39 mg /l free sulfur dioxide, 147 mg /l total sulfur dioxide, 0.081 color intensity at 420 nm . and cuvă 1 cm, 565 mg /l. total polysaccharides, 34.2 g /l reducing sugars, 21.4 g /l non-reducing extract, 1.12 g /l ash, 9.1 g/l glycerol, 54.32% SU.

Most significant values resulting from filtering the wine through kieselguhr and qualitative indicators are shown in Tab. 1.

Thus the optical density at 420nm. recorded a slight increase in grain kieselguhr filtration of 2.3 Darcy, remained constant at 0.8 Darcy passing through kieselguhr and suffered a slight decrease from 0.35 Darcy kieselguhr filtration. Wine tannin content is gradually reduced by one unit on the environment with increasing porosity filter. Total polysaccharide content is reduced by 5% compared to the blank in wine filtration through kieselguhr grain of 2.3 and 0.8 Darcy, and when passing through 0.35 kiselgru grain reduction was 10%. Alcohols, direct participants in the aging of the wine bouquet, have suffered reductions in concentrations of around 1.5% passing the wine through kieselguhr grain of 2.3, 0.8 and 1.9% passing through kiselguhr 0.35 Darcy. Total volatile fatty acids and esters are flavor components of wine. After filtration through kieselguhr grain of 2.3 Darcy volatile fatty acids were decreased by 4.3%, grain kieselguhr filtration of 0.8 Darcy reduced volatile fatty acid content of 6.3% and grain kieselguhr 0.35 Darcy reduced volatile fatty acid content by 10.5%. Ethyl esters of fatty acids Total volatile aromas of the wine participate in training, have suffered reductions of 2.3% to kiselghur filtration of 2.3 and 0.8 grain Darcy and 7% for grain of 0.35 Darcy kieselguhr.

Tab. 1.

The effects of different filtration with kieselguhr grains on quality indicators and composition of wine Muscat Ottonel

Analysed parameters	Witness sample	Kieselguhr grain of 2.3 Darcy	Kieselguhr grain of 0.8 Darcy	Kieselguhr grain of 0.35 Darcy
DO 420	0,086	0,089	0,086	0,085
Colour	white-greenish	green-yellow	yellow-green	Yellow-straw
Aspect	slightly-turbid	slightly-opalescent	Obvious-clear	Bright
Tannins mg/l	72	70	62	69
Total polysaccharides mg/l	590	560	560	537
Superior alcohols. mg/l	326	321	320	321
Acetates of higher alcohols (sum) mg / l	3,7	3,7	3,7	3,6
Total volatile fatty acids mg/l	15,2	14,9	14,3	13,7
Total fatty acid ethyl esters. mg/l	4,8	4,7	4,7	4,5

After filtration, the color of wine has evolved from the blank white green: green to yellow to wine filtered through kieselguhr 2.3 Darcy, the greenish yellow sample filtered through a kiselguhr, 8 Darcy, to yellow for wine filtered through 0.35 Kiselguhr Darcy.

Similarly and appearance of wine has improved filtration through kieselguhr from

various grains, from easy-on easy-opalescet cloudy, clear, clear and to the smallest grain appearance being bright. Wine by the diatomite filtration prestrat graded coarse (between 1.5 and 2.3 Darcy) do not affect the chemical constitution the filtered wine. The same filtering operation with kieselguhr graded alluvial fine (0.35 Darcy) can reduce the concentration of polysaccharides and condensed tannins in the wine filtered up to 10%.

Tasting wines such at one month after the filtering does not show any influence of these operations on the sensory profile of wine filtered. In addition to a 10% decrease in polysaccharide content, it signals a similar decrease in volatile fatty acids concentration with favorable risk profile of the wine smell filtered.

CONCLUSIONS

In terms of sensory, the wine obtained after filtering operation is more elaborate, with a much better defined taste, specific variety color, age and type of technology applied to achieve it, while being more stable and away from the possibility of defects.

For young wines the effect of the filtering operation is most evident, both in terms of physicochemical and sensory.

The quality of filtration depends largely on the quality of filter materials used, they directly influence the constitution and sensory profile of wine analysis, optical density at 420 nm showed a slight increase in grain kieselguhr filtration of 2.3 Darcy, remained constant passing through kieselguhr 0.8 Darcy and suffered a slight decrease from 0.35 kieselguhr filtration Darcy, from 0.087 to 0.083, wine tannin content decreased progressively as the use of a porous material with a finer filter.

The high separation capacity of certain filter media removes slurry particles attached macromolecules or compounds and certain values that are part of the structure and composition of wine, so some of them can be considered as precursors of aroma or elements with a fixing role of existing flavour substances in wines subjected to filtration flavor.

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