ISSN NO: 2770-4491
Date of Publication:28-11-2022

The Influence of grape pip on the content of phenol compounds in the process of grape juice fermentation

Sandro Chalatashvili
Doctor of Food Technology, Iacob Gogebashvili Telavi State University

Abstract: Wine as an alcoholic drink has been known since ancient time. Various technologies are used for producing high quality wine in different countries. Nowadays several methods of producing wine are spared. Scientists in many countries are working to develop and improve these methods.

Scientists are indicating to beneficial characteristics of wine. There is lot of information about beneficial character of grape because of the large amount of biological active materials.

Keywords: Wine; Phenolic compounds; hard parts of grape; Extractivity; pip.

As known from literature, grape contains som beneficial solutions such as: carbohydrates, organic acids, vitamins, phenolic compounds and etc.

The grape contains stalk and grape berry. Grape berry consists of skin, pulp and pip. In grape maturity stalk is 3-6 % of grape. The weight of stalk is 78-80 % water, 3 % tannins, 2-3 % mineral substances – mostly potassium salts.

The skin of the grape contains phenolic compounds, coloring substances, flavones, tannins, aroma solutions, pectin and mineral substances.

The hard parts of the grape and especially pip are rich in biologically active compounds. Nowadays, pip is used to produce grape seed oil, because it contains big amount of fatty compounds. Seed is 5-8 % of grape berry and phenolic compounds are 6-7 % of the pip. The fact that the fatty compounds have a negative impact on quality of wine is very important, but in case of mechanical damage of pip during grape processing.

It is known that according to the Kakhetian traditional method, wines, fermented in a Qvevri with hard parts of the bunch are characterized by higher extraction than wines made according to European rules - fermented only grape juice. Its high extractivity is determined mainly by phenolic compounds, which are transferred to the wine from hard parts of grape and which take an active part in shaping the type of wine, at all stages of its production and storage and have a direct impact on taste, bouquet, color, transparency, aging ability and more. Phenolic compounds are very important for health as substances with antioxidant, anti-inflammatory and anticoagulant properties.

The aim of the study was to determine the influence of pips participation in the fermentation process of grape juice. For this, we made wine in a Qvevri according to the Kakhetian traditional method (with the participation of all the hard parts of the bunch) and wine, using the same grape juice and pips.

As a result of experiment we got two samples of wine:

- Sample 1 – wine made by grape juice and all hard parts of grape together.
- Sample 2 – wine, made by grape juice and pips together.

The samples were analyzed for the amount of tannin and total phenols.

As it revealed, in the wine, which was fermented with all the hard parts of the bunch, the amount of tannin was more with 0.05 g / l, than in the wine, which was made using only with grape juice and pips, which is caused by the participation of all hard parts of the bunch in the fermentation process. The amount of tannin in the sample 1 was 1.5 g / l, while in the sample 2 it was 1.45 g / l. The amount of total phenols, in the wine which was made only by grape juice and pips, the total phenols were 0.82 g / l more than in control wine. In the sample 1, the total amount of phenols was 1.01 g/l and in the sample 2 the result was 1.83 g/l. Such difference of total phenols between is caused by the fact, that in the wine , made by the traditional method, in the process of fermentation, the existence of hard parts of the bunch makes it difficult for phenolic compounds to move in wine, certainly, the extraction of the phenolic compounds in stalk, skin and

ISSN NO: 2770-4491
Date of Publication:28-11-2022

pips. in the process of separation of wine and pressed skin, the part of phenolic compounds moves with pressed skin and the other part stays in wine. In the wine fermented on pips, the significant amount of extracted phenols stays in wine and it has a good influence on the quality of wine.

Literature

1. Gil-Muñoz, R., Gómez-Plaza, E., Martınez, A. and López-Roca, J.M., 1999. Evolution of phenolic compounds during wine fermentation and post-fermentation: influence of grape temperature. *Journal of Food Composition and Analysis*, *12*(4), pp.259-272.
2. Lopez-Velez, M., Martinez-Martinez, F. and Valle-Ribes, C.D., 2003. The study of phenolic compounds as natural antioxidants in wine.
3. Prado, J.M., Dalmolin, I., Carareto, N.D., Basso, R.C., Meirelles, A.J., Oliveira, J.V., Batista, E.A. and Meireles, M.A.A., 2012. Supercritical fluid extraction of grape seed: Process scale-up, extract chemical composition and economic evaluation. *Journal of Food Engineering*, *109*(2), pp.249-257.
4. Mironeasa, S., Leahu, A., Codina, G.G., Stroe, S.G. and Mironeasa, C., 2010. Grape Seed: physico-chemical, structural characteristics and oil content. *Journal of Agroalimentary Processes and Technologies*, *16*(1), pp.1-6.
5. Rousserie, P., Rabot, A. and Geny-Denis, L., 2019. From flavanols biosynthesis to wine tannins: What place for grape seeds?. *Journal of agricultural and food chemistry*, *67*(5), pp.1325-1343.