P21

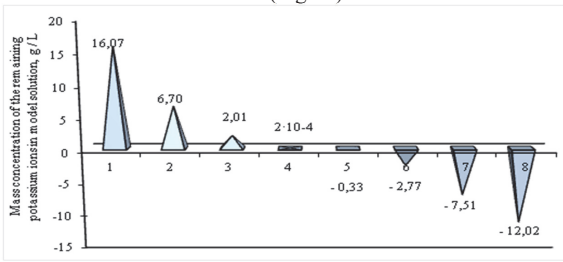
SULPHITATION OF WINE PRODUCTS WITH SOLUTION PREPARED OF TARTARIC ACID AND POTASSIUM SULPHITE

Ecaterina Covaci[a], Ivan Prida[b]

[a]*Department of Oenology and Chemistry, Technical University of Moldova, 168, Stefan cel Mare str., Chisinau MD-2004, Republic of Moldova*
[b]*"OenoConsulting" S.R.L., 25, Ion Creanga str., Chisinau MD-2064, Republic of Moldova*
e-mail: ecaterina.covaci@enl.utm.md

Sulphitation of wine products is a routine process widely used in the wine industry at various stages of production and regulated by normative and technological documents of wine products manufacturing. Disposing of the needs and technological possibilities of industrial enterprises, sulphitation process of wine is carried out using sulphur dioxide as sulphur source: sulphuric acid, native sulphur, liquefied sulphur dioxide and salts of sulphuric acid (meta - and sulphites) [1]. The sulphitation process of wine products using of salts of sulphites - potassium sulphite ($K_2S_2O_5$, E 224) has gained a large spread not only in craft winemaking but also in large wineries. At the same time, the basic disadvantage of this process is the exogenous enrichment of wine products with potassium ions, and the reduction of mass concentration of total titratable acids, which leads to the risk of crystalline instability resulting from the precipitation of tartaric salts thus, limiting the range of use of this process at the first stages of the manufacture of the wine products [2].

Under laboratory conditions, a process for the sulphitation of wine products has been developed by reducing the risks of crystalline instability at all stages of their production, with the use of potassium sulphite solutions. The process provides a prior preparation of a mixture of 100 g/dm^3 potassium sulfite solution and tartaric acid of 300 g/dm^3 solution at rapport 2:1 (by volume ratio) with intense stirring. According to the results, the quantitative equilibrium of precipitation is reached at a quantity of 0.3315 mol of the corresponding reactant species and at the value of 0.9995 molar ratio (Figure).



The positive value or "+" of the mass concentration denotes the excessive content of potassium ions and the negative value or "-" describes content necessary for the complete precipitation of the tartaric acid in model solution.

Figure. Dynamics of mass concentration of potassium ions remaining in model solution.

The prepared solution, based on potassium sulphite and tartaric acid, is used for the sulphitation into wine products, after the pre-separation of the formed precipitate, at all stages of their production. The described process was granted as national patent BOPI no. 952 of 2015. Effectiveness of the selected agent described the preservation of crystalline stability (no tartaric precipitate) and the value of saturation temperature remained constant in the samples.

References

1. Antoce A., Nămoloşanu I. Folosirea raţională a dioxidului de sulf în producerea şi îngrijirea vinurilor. Bucureşti: Ceres, 2005, 120 p.

2. Prida I., Ialovaia A., Sturza R., Bain B. Bazele teoretice şi analitice de fabricare şi păstrare a mustului de struguri sulfitat-acidifiat. Akademos, 3 (34), 2014, p.86-92.