

The yeast on the grape berry surface influenced by climatic factors

Meiling Yao^{1,*}, Fei Wang¹, Elizaveta Breahna², and Gheorghe Arpentin²

¹Technical University of Moldova, Faculty of food industry, bd. Stefan cel Mare 168, Chisnau, Republic of Moldova

²National Office for Vine and Wine, st. Mitropolit Dosoftei 126, Chisnau, Republic Moldova

Abstract. Republic Moldova is a country with long history of winemaking. Understanding the microorganism on the grape surface is very important to the winemaking process, and it's also a national strategy of development of the wine industry. In this study, twenty seven samples from three regions and three vintages in Republic of Moldova were studied. The conventional microbiological methods combine with molecular methods (PCR-DGGE) have been used for study the quantity and the quality of microbes. The result show that the yeast population on the berries are variable in different vintages, and in the climatic factors, the Cool nigt index (CI) affect the yeast most. From the identification result, *A.Pullulans* and *R.glutins* are two culture which are easy to be found on the Moldova grapes. The autochthonous *S.cerevisiae* also been identified, but it shows a different results from different vintages.

1 Introduction

The wine quality and the characteristic are influenced by the microorganisms present in the fermentation process. ^[1] The natural yeast not only plays an important role in the winemaking process, but also in the “terrior”. The population and the diversity of natural yeast on the berry surface are shaped by many factors such as vintages, the location of the vineyard and the climate.^[2] Although, researchers have studied the relationship between microorganism on the grape and the climatic factors and the regional factors.^[3]But it’s still not clear how these factors influence the diversity and the population of microorganism on the grapes.

In this study, the grape berries collected from three protected geographical indications (PGI) regions in Republic of Moldova, conventional microbiological methods combine with molecular methods (PCR-DGGE) have been used for study the quantity of microbes and identification.

* Corresponding author: meilingyao2019@gmail.com

2 Material and method

2.1 Samples

Grape samples collected from several vineyards in three PGI in Republic of Moldova: PGI Codru (PGI C), PGI Valul lui Traian (hereafter referred as PGI VLT) and PGI Stefan Voda (hereafter referred as PGI SV). The sampling time is when the grapes reach the technological maturity in every year. For each sample, 1 kg berries are taken, the whole sampling process took place in sterile condition. Eight commercial varieties which can represent the regional characteristic were studied: Feteasca neagră, Feteasca Albă and Sauvignon Blanc et al. (detail in Table 1)

Table1. Characteristics of samples.

PGI name	Coordinates Sampling Place	Variety	Vintage	Sample Code
PGI “Codru”	(E47.41,N27.98)	Feteasca Neagra	2018	FN_C_18
			2019	FN_C_19
			2020	FN_C_20
	(E47.06,N28.51)	Feteasca Alba	2018	BG_C_18
			2019	BG_C_19
			2020	BG_C_20
	(E47.22,N28.52)	Sauvignon Blanc	2018	SA_C_18
			2019	SA_C_19
			2020	SA_C_20
PGI “Valul lui Traian”	(E46.39,N28.73)	Feteasca Neagra	2018	FN_VLT_18
			2019	FN_VLT_19
			2020	FN_VLT_20
	(E46.19,N28.63)	Feteasca Alba	2018	BG_VLT_18
			2019	BG_VLT_19
			2020	BG_VLT_20
	(E45.65,N28.47)	Merlot	2018	ME_VLT_18
			2019	ME_VLT_19
			2020	ME_VLT_20
PGI “Stefan Voda”	(E46.53,N29.87)	Feteasca Neagra	2018	FN_SV_18
			2019	FN_SV_19