

STUDIES ON OBTAINING ACTIVE DRY WINE YEAST USING DIFFERENT NITROGEN SOURCES

Mihai FRÎNCU¹, Iuliana Diana BĂRBULESCU¹, Mihaela BEGEA^{2,3}, Răzvan Ionuț TEODORESCU⁴, Corina DUMITRACHE⁴, Valerica TUDOR⁴, Cornel-Daniel BANIȚĂ⁴, Ioana Simona MĂRCULESCU¹, Alexandru Ionuț CÎRÎC^{2,3}, Petre Andrei CĂTĂLIN¹, Carmen-Rodica VRÎNCEANU⁴, Tóth TAMÁS⁵, György BÁZÁR⁵

e-mail: barbulescudia@yahoo.com, mihaela.begea@gmail.com

Abstract

Most of research on wine microbiology has concentrated on *Saccharomyces* yeasts for development of starter cultures, especially on *Sacch. cerevisiae*. As the importance of the role of *S. cerevisiae* in winemaking has been established, the number of wine yeast strains available in the world market for use as winemaking starters grew in the last years. The upstream process of producing *Sacch. cerevisiae* biomass on a culture medium based on sugar was performed by testing different sources of inorganic and organic nitrogen (yeast extract and monoammonium phosphate) in submerged fermentations using a Biostat B plus bioreactor (4L working volume). The upstream parameters have been monitored on-line (oxygen flow; pH around 4.35; temperature 30⁰C; stirring rate 250 rpm) and off-line (total soluble dry matter; pH). The biomass obtained after the downstream process has been dried through freeze-drying. Through the combination of two carbon sources as yeast extract (0.7%) and monoammonium phosphate 10.71 g/L dry cell weight (DCW) has been obtained, compared with 9.6 g/L DCW in the case of the fermentation without monoammonium phosphate. From the economic reasons, the monoammonium phosphate as an inorganic nitrogen form has been excluded from the experiments. Finally, the higher content of dry yeast biomass (14.43 g/L DCW) was obtained when 11% yeast extract as the only nitrogen source has been added at the fermentation media.

Key words: active dry biomass, yeast extract, wine