The Optimization of Medium Diameter of Ceramic Membranes' Pores Involved in Tangential Flow Filtration

A. DUNOIU, P. SAVESCU, A. POPA

University of Craiova, 13 A.I. Cuza Street, 200585, Craiova, Dolj, Romania
e-mail: www.central.ucv.ro

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SUMMARY

The functional features of a ceramic diaphragm are as it follows: the chemical nature, the prop porosity and the filtration stratum porosity; the thickness of the filtration stratum; the medium diameter of the pores; finally, the prop geometry. In the present article we have studied the last two parameters and their influence on the micro filtration performances: debit, rinsing and sterilization.

For all the experiments it was adopted the discontinuous function with the permeat recycling. Many brands of organic”cartridges” are actually available on the market, having the more often medium diameters of the pores of 0.65 µm (GAILLARD, 1984). They permit all the dregs elimination and all the lactic bacteria elimination; but some of the microorganisms, for example Leuconostoc, are susceptible of passing into the final product.

The main limits of using the filtration on organic diaphragms are: the rapid filling in of the filtration medium; the necessity of wine rinsing before its filtration through the diaphragms; the frequent renewal of filtration props, very difficult (or almost impossible) to be regenerated, rising the costs of treated hectoliter (PEASE, 1982; WEBER and HAGEN, 1977); finally, the pollution generated by the throwing of these materials.

The official contemporary norms impose less than a viable germ in 200 ml. The reason more often invoked is the risk of refermentation provoked by Leuconostoc oenos at sweet white wines (REEVES, 1983), very appreciated products in the Anglo-Saxon countries. The consequence at the level of the production is the necessity of a finer and finer wine filtration on diaphragm with a maximum diameter of 0.45 µm with all the constraints imposed by the products. From here it results the interest of orientation towards new technologies, more reliable, more performing and less constraint.