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Biological treatment of the sweet and acid whey by *Candida kefyr*

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ABSTRACT

The dairy industry produce large quantities of whey which is a byproduct causing a pollution once rejected in the environment without treatment. Therefore this study aims to treat the mixture of acid and sweet whey by coupling two processes. The primary physicochemical treatment of sweet and acid whey diluted to 1/4, realized by coagulation-flocculation with initial pH 10 using 800 mg L⁻¹ of the aluminum sulfate in combination with 400 mg L⁻¹ of the polymer Zetag 48, has reduced the turbidity with 90%, orthophosphate with 98%, total nitrogen with 77%, COD with 17% and BOD5 with 11%. This treatment was effective in reducing turbidity, orthophosphate and total nitrogen which reached the discharge standards. The secondary biological treatment was realized by adding only *Candida kefyr* in suspension or in combination with *Aspergillus niger* or *Saccharomyces cerevisiae* during 5 days. The best treatment was obtained using *Candida kefyr* enriched by 1g L⁻¹ of ammonium sulfate as a source of nitrogen giving a reduction of 66% of the COD and 94% of the BOD5. Orthophosphate indicates a reduction of 95%. Total nitrogen was consumed by *Candida kefyr*, despite the addition of ammonium sulfate, and notes a final value of 47.3 mg L⁻¹.

Keywords: Sweet and acid whey, physico-chemical treatment, biological treatment, *Candida kefyr*, *Aspergillus niger*.
