

## Abstract :

The adverse environmental impacts associated with a very high nitrate concentration is undesirable due to their extremely toxicity to most aquatic species and human, include also a strongly promotion of eutrophication. Different methods are developed to eliminate this water pollution, so the use of the denitrifying bacteria, is the ideal solution thanks to its low cost and low energy consumption. In this study, we performed the isolation of bacteria from activated sludge. The best denitrifying bacteria selected was incubated in a bioreactor containing a synthetic wastewater rich in nitrate ions. The Griess test ( $NR_1 + NR_2$ ) and zinc powder were proved the denitrification capacity of this strain, which had the ability of the complete reduction until the last stage passing through nitrite to atmospheric nitrogen, which gave also a reduction percentage of 75% with a significant growth rate. Finally the bacterium was tested both in microscope and in biochemical gallery.