

Extraction And Purification of The Active Substance Contained In The *Aloe Vera* For Their Use As a Natural Flocculant

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Abstract-The aim of this study is the use of organic substances (*Aloe Vera* juice) as flocculant, the obtained coagulant aid is used to reduce the water turbidity intended for consumption. The latter is obtained from the drinking water treatment plant of Oued El Athmania, Mila, Algeria: the characterization of this water shows that the initial turbidity and suspended solids were 5.5 NTU and 7.4 mg/L, respectively.

The effectiveness of *Aloe Vera* juice is tested at the laboratory where aluminum sulfate is used as a coagulant. The role of the latter is the destabilization of negatively charged colloids present in the water to be treated, and the *Aloe Vera* juice which is used as bio-flocculant favors the agglomeration and the formation of flocs to improve the turbidity removal efficiency. The *Aloe Vera* juice is obtained after cleaning and grinding the *Aloe Vera* leaves. The solution obtained is diluted to 10% before use.

The results obtained show that the reduction of turbidity is 86.9% with a maximum reduction of suspended matter 72.97% for a dose of 40 mg/L of aluminum sulfate and pH 7.2. The addition of *Aloe Vera* juice increases the turbidity reduction to 89.27% and the suspended solids to 77.02%. In this case the concentration of sludge produced was about 0.847 g/L. In this study, several parameters were measured such as pH, organic matter, alkalinity, total carbon ...etc.

In this study, the types of active substance in the *Aloe Vera* was identified using FTIR and XRD.

Keywords- Natural Flocculant, Active Substances, Drinking Water, Turbidity, TSS.