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Viscosity Investigation of Gelatin Based Solutions Including Olive Mill Wastewater

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Extended Abstract

Olive mill wastewater (OMW) is obtained during the olive oil production by applying various industrial processes and it is a solid-liquid stated substance which has powerful effect to pollute the environment hundred times more than the domestic wastewater. According to many research in recent years, olive mill wastewater can be used by converting beneficial matter in dissimilar investigation areas.

In our previous study, the spectroscopic investigations of the OMW which were taken varied regions indicated that it has property of strong UV absorber [1]. It is stated that OMW has a potential to be used as UV shield or photo initiator due to OMW absorbs the sunlight in UV region and radiates in the visible region. However, OMW has some amounts phenol compounds which have phytotoxic property [2]. Therefore, the percentage of toxicity of OMW was reduced in about %90 by using the vertical flow constructed wetland system including zeolite as the bedding material then the rest of OMW was centrifuged and separated by the residues. Besides, remaining OMW saved from some toxic compounds was filtered and centrifuged once again via PEG 2000 to purification. After these procedures, this hazardous effluent can be used as the useful resources.

Nowadays, gelatine based solutions and films are utilized as drug delivery and injury pad in a widespread manner. So the viscosity investigation of gelatine based solutions including OMW as UV-sensitive plays an important role in determining the characteristics of the solution. In this study, viscosity measurements were taken for pure and 5% (w/v) OMW solutions of 2% (w/v) and %5 (w/v) gelatine by using Fungilab Rotational Low Viscometer. The measurements of the specimens containing OMW were taken protected from light and then irradiated UV in 340nm wavelength during 30 minutes.

According to results of the experiments, it was observed that pure 2% and 5% gelatine behave in order Newtonian flow and Bingham Newtonian flow. The OMW samples was caused to change the flow behaviour of pure gelatine solutions. The radiation has also changed their viscosity constants. The comparative charts and mathematical models of all specimens will be given in our poster presentation with an elaborate. The films can also be formed from these gelatine based solutions including OMW. Our investigation work of mechanical properties and tensile tests of these films continues.

References

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