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## 優勝作品專輯

國家：Turkey

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作品名稱

**Recovering bioethanol from fruit wastes**

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## ABSTRACT

1. Purpose of the research: Recovering bioethanol from fruit wastes by using brewing yeast and enzyme Viscozyme L
2. Procedures: Four different experiments were conducted in our project.

**Experiment-1: Samples in RM by the addition of only *S.Cerevisia*.**

**Experiment-2: Samples in RM broth meduim by the addtion of 100 µl/g  
ViscozymeL and *S. Cerevisiae***

**Experiment-3 : ViscozymeL with different concentration**

**Experiment-4: to determenine whether the enzyme with high concentration  
inhibited the fermentation.**

**Analysis of ethanol:** HPLC method was used for the analysis;

**HPLC method: (high performance liquid chromatography)**

3. Data

**HPLC measured initial and final concentrations of glucose and ethanol by  
the addtion of *S. Cerevisiae*.**

Initial glucose concentration and final ethanol concentration was the highest in Grape pulp 12 and 9 g/L respectively. Despite the glucose concentration was the lowest, the ethanol concentration was quite high (7 g/L) in the mixture with orange. The lowest ethanol was produced in the mixture with pomegranate.

**Concentrations of ethanol and glucose from the samples in RM broth  
meduim by the addtion of 100 µl/g ViscozymeL and *S. Cerevisiae***

After the 24 hour incubation by the addition of enzyme glucose concentration increased by 1, 4 and 2 respectively in sample 1, 2 and 3. The ethanol concentrations in comparison to first experiment were higher especially in the sample1 (grape pulp).

#### **Effect of ViscozymeL with different concentration on glucose production.**

The glucose concentration generally increased by the addition of 200 micro L of enzyme as the time proceeded. In grape pulp sample glucose concentration didn't increase by the addition of 500 micro L enzyme.

#### **The remaining glucose and produced ethanol concentrations by the addition of viscozyme L with two different concentrations and *S. Cerevisiae***

As the concentration of enzyme added increased the amount of ethanol also increased in sample 2 and 3 but in the sample 3 the fermentation was inhibited.

#### **4. Conclusions**

In this study sugars in fruit wastes that are regularly not recycled were fermented successfully into ethanol by using *S. Cerevisiae*.

Generally we get more ethanol from the samples when the enzyme was used. As the graph5 shows the ethanol concentration generally increased as the enzyme concentration increased. But especially in the sample1 (mixture with pomegranate) at 200 and 500 micro liter concentrations, ethanol production were 2 and 0 g/L respectively. In the light of this data we concluded that the enzyme with high concentration might inhibit the fermentation. When the activity of enzyme was inhibited by keeping the pretreated enzyme in boiling water, the fermentation restarted and recovered more ethanol; 8 and 12 g/L at the enzyme concentration of 200 and 500 microliter respectively.

## 評語

The work aims to recover bioethanol from fruit wastes. The theme is important especially for today's short of energy. However, the authors should cover their work using either similar or different methods and point out their advantages over others.