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## CHEMICAL CONTENT OF PAPAYA CARICA PLANT: A COMPARATIVE ANALYSIS

### Authors

### Abstract

This study explores the chemical content of ethanol extracts from Papaya Carica plants, focusing on the concentration of various bioactive compounds. Using UV spectrophotometry, we compared the chemical profiles of locally grown Papaya Carica from Uzbekistan with imported Indian Papaya Carica. The analysis highlights significant differences in the concentration of key compounds, with local samples showing higher levels of certain bioactive substances compared to the imported ones. The findings suggest that local Papaya Carica may offer enhanced therapeutic benefits.

### Introduction

Papaya Carica, commonly known as papaya, is renowned for its rich chemical composition, which includes various bioactive compounds with potential health benefits. These compounds are known for their antioxidant, anti-inflammatory, and anti-carcinogenic properties. This study aims to compare the chemical content of ethanol extracts from Papaya Carica grown locally in Uzbekistan with those imported from India. Utilizing UV spectrophotometric analysis, we seek to

determine the differences in chemical profiles and assess the potential implications for their therapeutic use.

## **Materials and Methods**

### **Plant**

### **Material**

Three samples of locally grown Papaya Carica were collected from different regions within Uzbekistan. One sample of Papaya Carica was imported from India for comparison. All samples were authenticated and processed in the laboratory.

### **Reagents and Chemicals**

- Ethanol (analytical grade) from Sigma-Aldrich
- Rutin (reference standard) from Sigma-Aldrich

### **Extraction**

### **Procedure**

The samples were washed, dried, and ground into a fine powder. Ethanol extraction was performed by soaking 10 grams of each powdered sample in 100 mL of ethanol for 24 hours with occasional shaking. The extracts were filtered using Whatman No. 1 filter paper and evaporated to dryness under reduced pressure. The residues were re-dissolved in a known volume of ethanol for further analysis.

### **UV**

### **Spectrophotometric**

### **Analysis**

The chemical content of the ethanol extracts was quantified using a Shimadzu UV-1800 spectrophotometer. Rutin was used as the reference standard for calibration.

- **Preparation of Standard Solution:** A stock solution of rutin (1 mg/mL) was prepared in ethanol and diluted to obtain standard solutions ranging from 10 to 100 µg/mL.
- **Sample Analysis:** The ethanol extracts of the papaya samples were diluted appropriately, and their absorbance was measured at specific wavelengths. The chemical content was calculated using the calibration curve.

## Results

The analysis indicates that locally grown Papaya Carica contains higher concentrations of certain bioactive compounds compared to the imported Indian Papaya Carica. The following table summarizes the chemical content based on UV spectrophotometric measurements:

### Chemical Content

Sample	Absorbance (at 415 nm)	Chemical Content (mg/g rutin equivalent)
Local Sample 1	0.1452	0.75%
Local Sample 2	0.1428	0.73%
Local Sample 3	0.1376	0.69%
Indian Sample	0.1203	0.60%

The results demonstrate that the local Papaya Carica samples exhibit a higher concentration of bioactive compounds compared to the Indian samples.

## Discussion

The elevated levels of bioactive compounds in locally grown Papaya Carica could be attributed to factors such as soil quality, climate conditions, and agricultural practices in Uzbekistan. These elements may influence the phytochemical profile of the plant. The use of rutin as a reference standard facilitated accurate quantification of the chemical content, highlighting the potential of local Papaya Carica as a superior source of beneficial compounds.

## Conclusion

This comparative study reveals that locally grown Papaya Carica from Uzbekistan possesses a higher concentration of certain bioactive compounds compared to the imported Indian Papaya Carica. The findings underscore the potential of local Papaya Carica as a more potent source of therapeutic agents. Further research into the environmental factors and agricultural practices that enhance the chemical content of local papaya is recommended. This study contributes to the understanding of phytochemical variations between locally grown and imported plants, emphasizing the significance of local biodiversity in pharmacognosy and phytotherapy.

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