

GC-MS Analysis of Papaya Leaf Extract (*Carica Papaya L.*)

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Abstract

The current study aimed to determine the phytochemicals present in the leaf extract of two papaya varieties grown in southern Iraq. The phytochemicals present in the ethanolic extract of papaya leaves were identified using the GC-MS detection system. The results showed the presence of more than thirty phytochemicals in the ethanolic extract of papaya leaves. The main phytochemicals present in papaya leaf extract in terms of their relative abundance are Oleic Acid, Tocopherol, Sitosterol, Neophytadiene, Butyl 9,12,15-octadecatrienoate, n-Hexadecanoic acid, Phytol, Tetramethyl-2-hexadecen, Dasympidol-1-methanol, acetate (ester), Campesterol, Squalene, Octadecenoic acid, Stigmasterol and D-Limonene. The present study revealed that the papaya leaf extract was composed of a variety of metabolites and therapeutic active substances, in addition to novel substances. These substances can be isolated and evaluated experimentally to confirm their biological and medicinal activities as well as verify their mechanism of action.

Keywords: Papaya, Phytochemicals, GC-MS analysis, Plant extract, Red lady.

1. Introduction

Papaya (*Carica papaya L.*) belongs to family Caricaceae. It is one of the fastest growing tropical or subtropical fruit plants. The original home of this plant is the tropics of America, possibly southern Mexico, Costa Rica or Central America, and spread around the sixteenth century to the tropics, Papaya is an evergreen dicotyledonous plant [1]. Papaya is rich in nutrients and antioxidants and has a high medicinal value, it is the source of many powerful and effective medicines [2]. All parts of the plant, leaves, fruits and seeds have been used traditionally to treat many different diseases including malaria, blood pressure, dengue fever, jaundice, sinus and eczema, anti-inflammatories, indigestion, anti-hypertensive activities, and tumors. These medicinal and nutritional properties are due to the presence of many phytochemicals such as vitamins, glycosides, alkaloids, steroids, flavonoids and phenols [1,3]. Papaya leaves have many uses, juice of the leaves helps to increase white blood cells and platelets. It is also used as a treatment for diseases of Urogenital diseases [4]. Dried leaves are best as a tonic and blood purifier [5]. Papaya leaf extract in an unrevealed composition is shown to possess anticancer activity and inhibition of cell proliferation in a variety of cancer cell lines, which has been patented [6]. The analgesic activity of *Carica papaya* leaves (CPL) extract was investigated in mice model using acetic acid induced pain (Sigmund method), Ethanol extract showed the best analgetic activity that was comparable to aspirin [7]. The therapeutic efficacy and nutritional properties of this plant depend on the contents and number of these bioactive compounds, which vary according to the environment. Due to the lack studies in Iraq, the current study aimed to cultivate this plant in southern Iraq and determine bioactive compounds of the papaya leave extract which will help to explore potential use of this plant in food and pharmaceutical industries.

2. Materials and Methods

2.1. Plant cultivation and Collection of plant specimen

Planting two varieties of papaya (Local, Red lady) in the province of Basra, southern Iraq, During the growing season 2020 as an experiment to cultivate this plant in southern Iraq successfully.

The leaves of the cultivated papaya plants of both varieties were collected after five months of planting. After that, the leaves were washed under a continuous stream of tap water for 5 minutes and then dried aerobically, The dried samples were ground into a powder using a grinding machine and then sieved. Samples were stored at 4°C in airtight glass containers until extraction.

