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## GC-MS Analysis of *Amorphophallus Campanulatus* Decne Tuber

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### ABSTRACT

To investigate the phytoconstituents of ethanolic extract of *Amorphophallus campanulatus* decne tuber using GC-MS. GC-MS analysis of *Amorphophallus campanulatus* decne tuber was performed by using Agilent 6890 GC with 59739N MSD and GC -MS equipped with Elite-I fused with silica capillary column(Cpsil 8cb:30mm×25mm×0.25mm).The result of GC-MS analysis confirmed the presence of 10 compounds. The most prevailing compounds are heaxadecanoic acid, 9, 17-octadecadienal, Octadecanoic acid, heptacosane, 1-cholro, nosacosone, ergost-5-ene, stigmassterol, etc. the presence of phytoconstituents reveals the presence of medicinal value.

**Keywords:** *Amorphophallus campanulatus* decne tuber, GC-MS analysis.

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## INTRODUCTION

Traditional Indian medicine are found to be safe and effective. Many plant species have been used in folk medicine to treat various ailments. Every compound from plants continue to play a major role in therapeutic remedies in many developing countries<sup>1</sup>. *Amorphophallus campanulatus* decne tuber, is an edible tuber most wide consumed in tropical region and is commonly known as elephant foot yam. Elephant foot yam is widely grown and consumed in south eastern countries like India, Philippines, Malaysia, Indonesia, In India, it is cultivated in Andhra Pradesh, West Bengal, Gujarat, Kerala, Tamil Nadu, Maharashtra, Uttar Pradesh, and Jharkhand<sup>2,3</sup>. *Amorphophallus* is a good source of energy, sugar, starch, proteins as well as minerals<sup>4</sup>. The tuberous roots of the plant posses blood purifier properties and have been used traditionally for the treatment of piles, abdominal disorders, tumours, enlargement of spleen, asthma and rheumatism<sup>5,6</sup>. Hence the present study is to identify the phytochemical constituents present in *Amorphophallus campanulatus* decne tuber by GC-MS.

## MATERIALS AND METHOD

The crude *Amorphophallus campanulatus* Decne tubers were procured from Rithu bazar market, Mehdipatnam, Hyderabad, Telangana, India. The tubers were authenticated by Botanical survey of India, Deccan regional centre Hyderabad-500048, Telangana, India, with reference number BSI/DRC/2015-16/Tech./735. The *Amorphophallus campanulatus* tubers were cut into proper Size and dried in shade with proper care. The dried plant tubers were blended in to coarse powder.

### **Preparation of sample extract:**

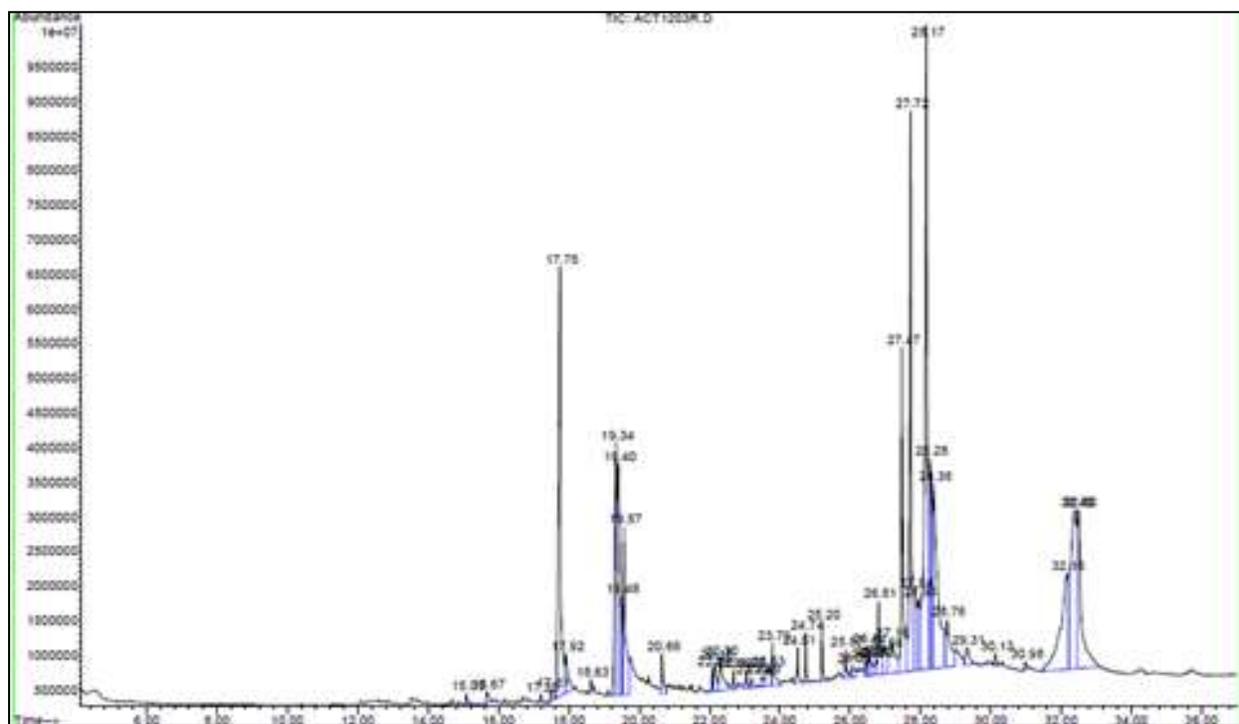
The coarse powder 500gm was subjected to maceration and transferred to stoppered flask, and treated with pure ethanol until the powder is fully immersed. The flask was shaken every hour for the first six hours and then it was kept aside and again shaken after 24 hours. This process was repeated for 72 hours, followed by exhaustive maceration for 48 hours by using solvent ethanol. The solvents was decanted and filtered with filter paper and recovered with help of rotary vacuum evaporator. The extracts were dried under desiccators<sup>7</sup>. The final extract was then subjected to GC-MS analysis.

### **GC-MS analysis:**

GC-MS analysis of sample were performed by using Agilent 6890 GC with 59739N MSD and GC-MS equipped with Elite -I, fused with silica capillary column (cpsil 8cb :30 mm x 25mm x 0.25 mm) composed of 100% Dimethyl polysiloxane. For GC-MS detection an electron ionization system with ionizing energy of 70 ev was used. Hydrogen (99.99%) was used as the carrier gas at

a flow rate of 1.5 ml and an injection volume of 2 micro liters. It was employed with split ratio of 10:1, Initial injection temp of 40<sup>0</sup> c to final 280<sup>0</sup> c. Ion source temp 230<sup>0</sup> c. The oven temp was programmed from 110<sup>0</sup> c (isothermal for 2 minute) with a rate of 10<sup>0</sup> c per min to 300<sup>0</sup> c. And a scan interval 0.5 sec and fragments from 20-200 Dalton. Total GC running time was 36 minutes. The relative average peak area and retention time, molecular formula with that of molecular weight were obtained. The interpretation on mass spectrum GC-MS was conducted by using the data base of national institute standard and technology (NIST), having 62,000 patterns. The spectrum of unknown component was compared with spectrum of known component stored in NIST library. The name, molecular weight and structure of the components of the sample material were identified.

## RESULTS AND DISCUSSION



**Figure1: GC-MS chromatogram of the ethanol extract of *Amorphophallus campanulatus* Decne tuber.**

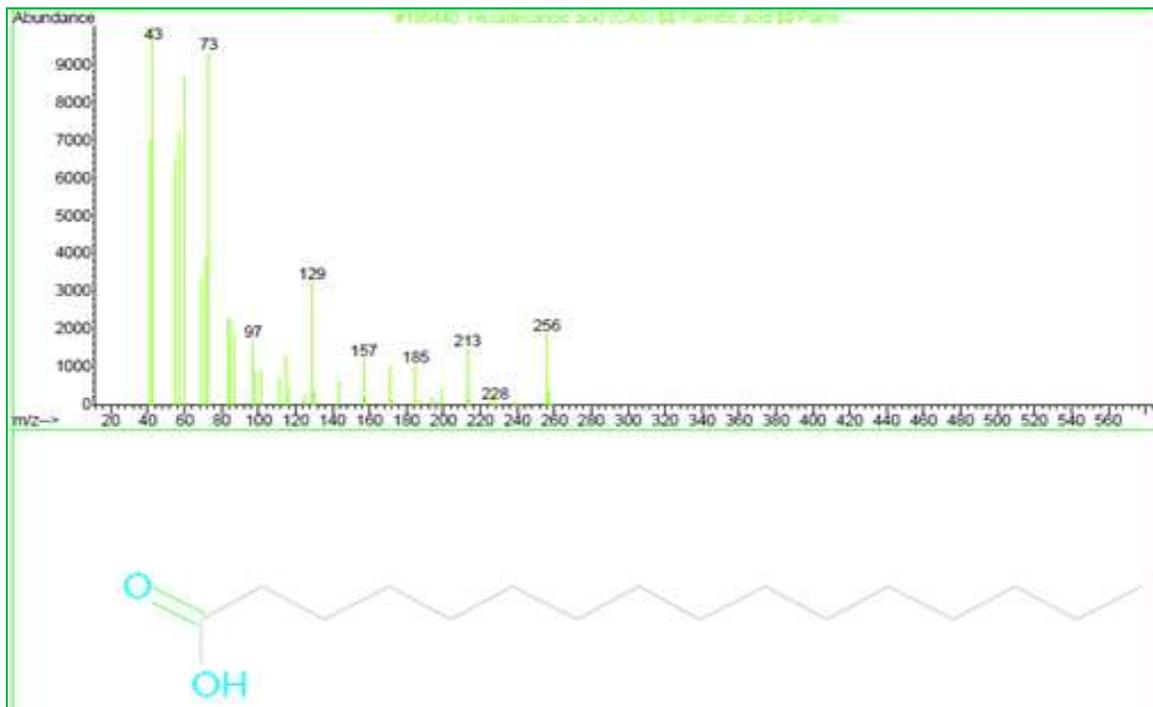


Figure 2: Mass spectrum of Hexadecanoic acid

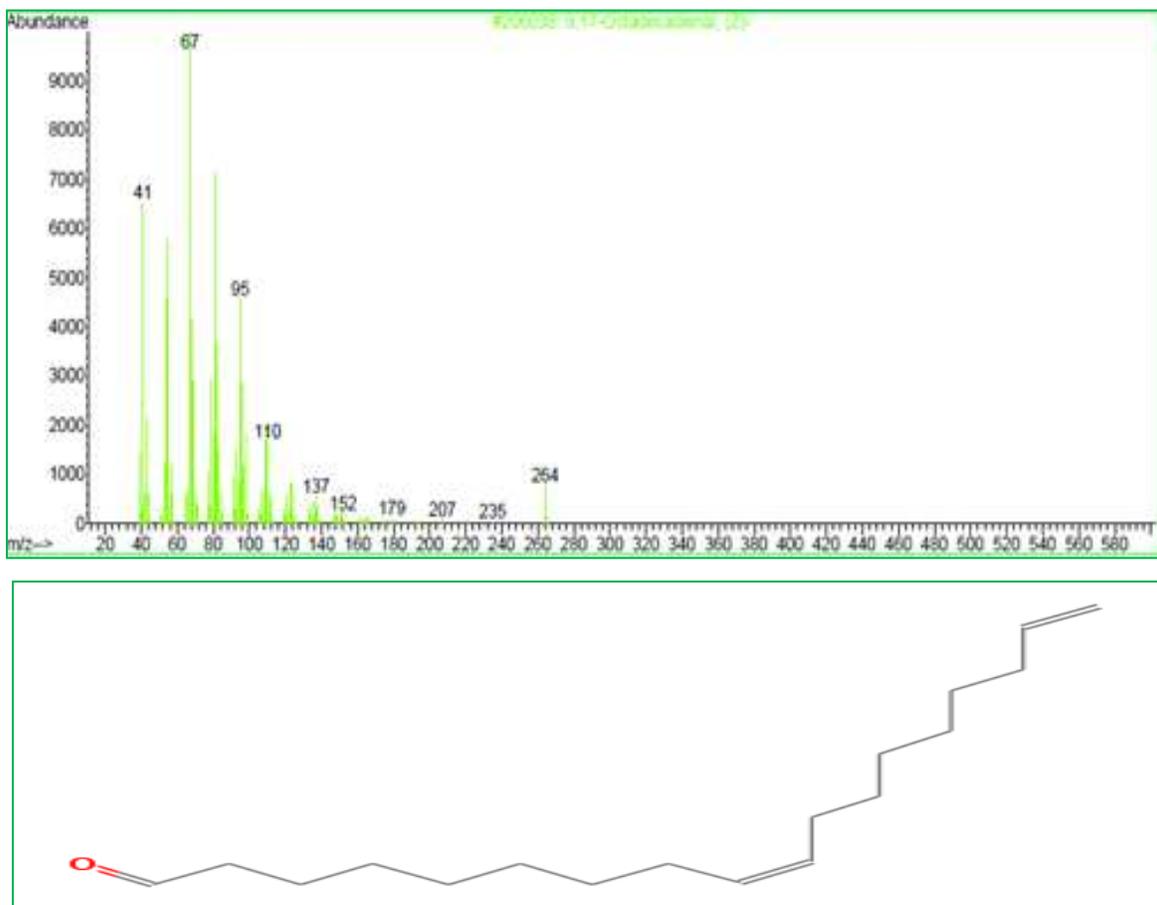


Figure 3: Mass spectrum of 9, 17-octadecadienal

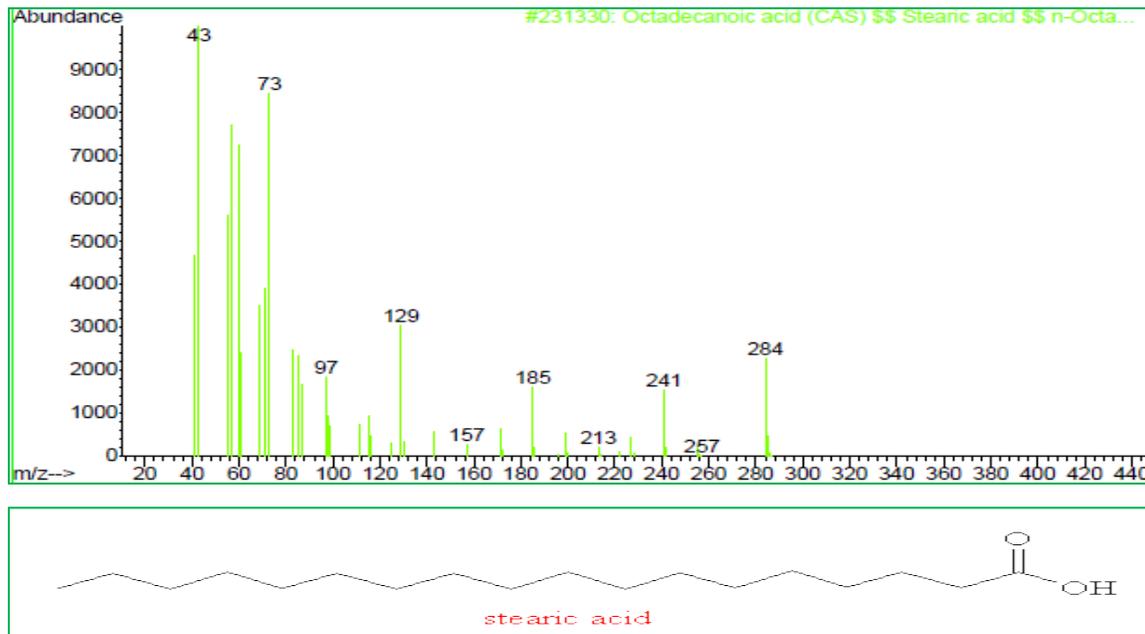


Figure 4: Mass spectrum of octadecanoic acid or stearic acid

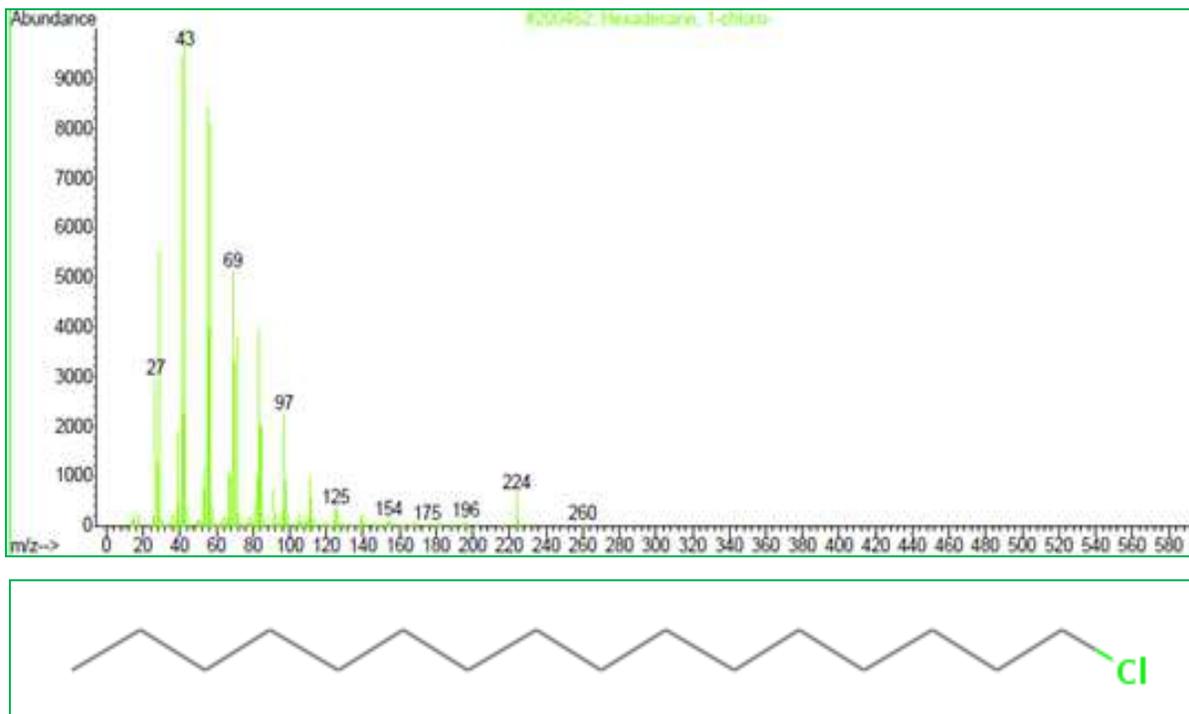
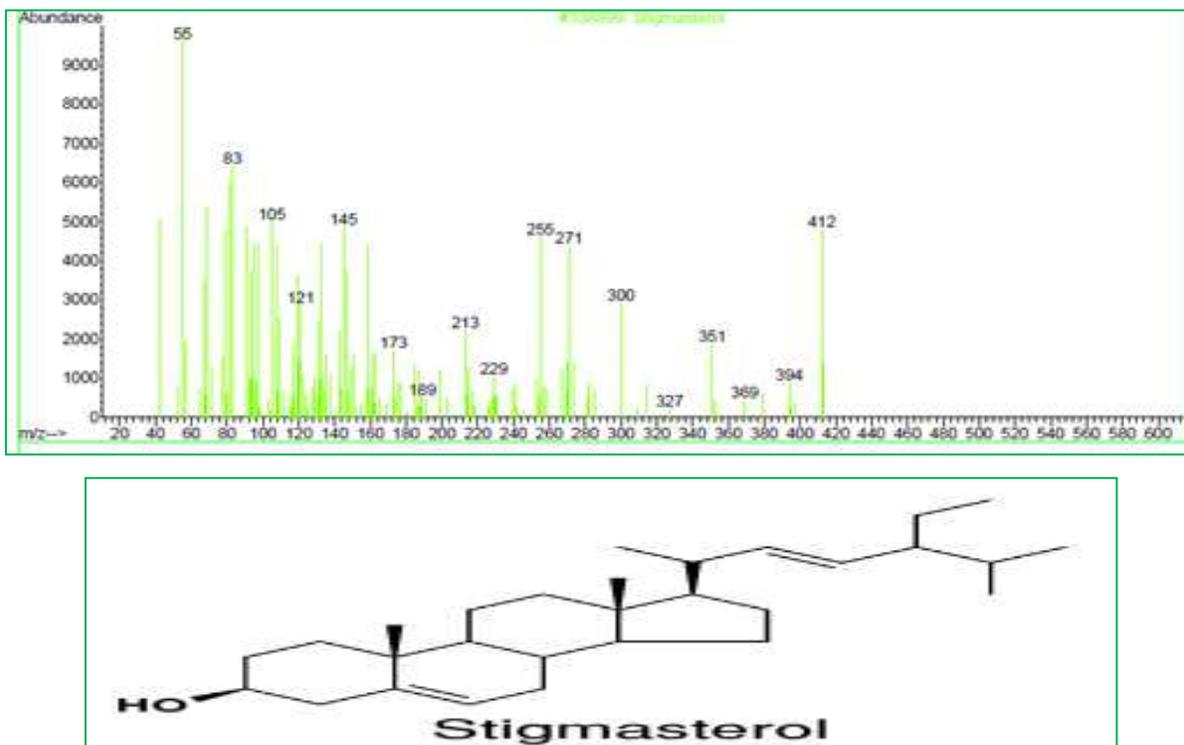
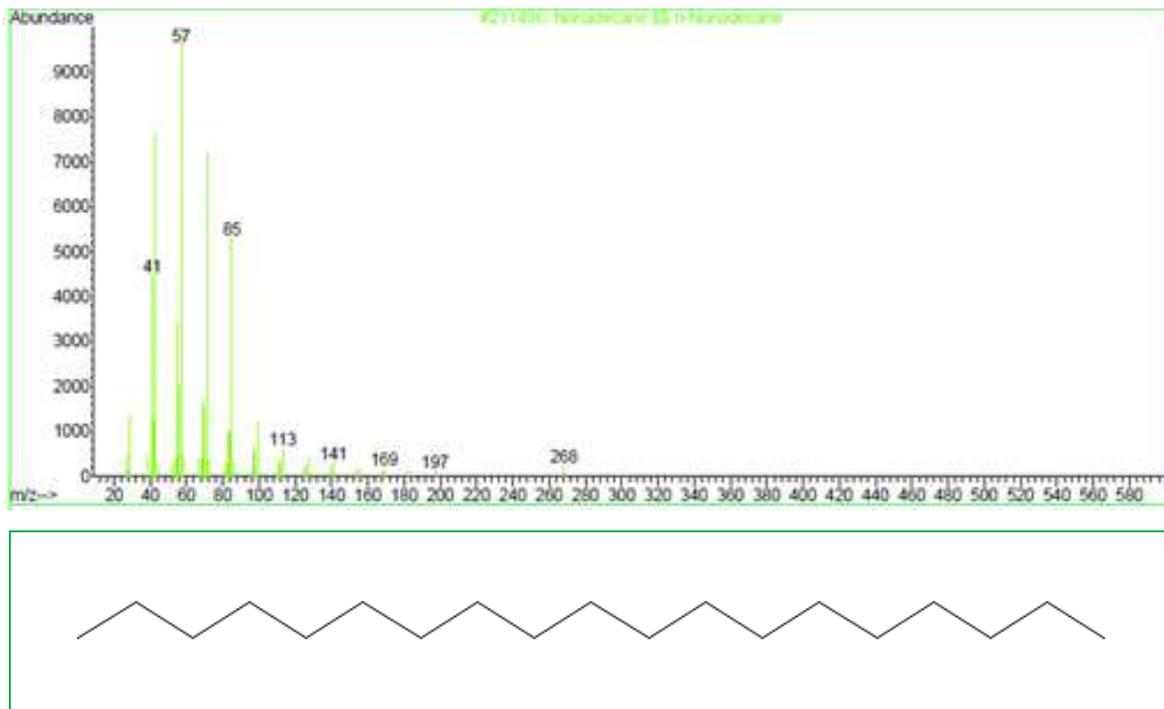
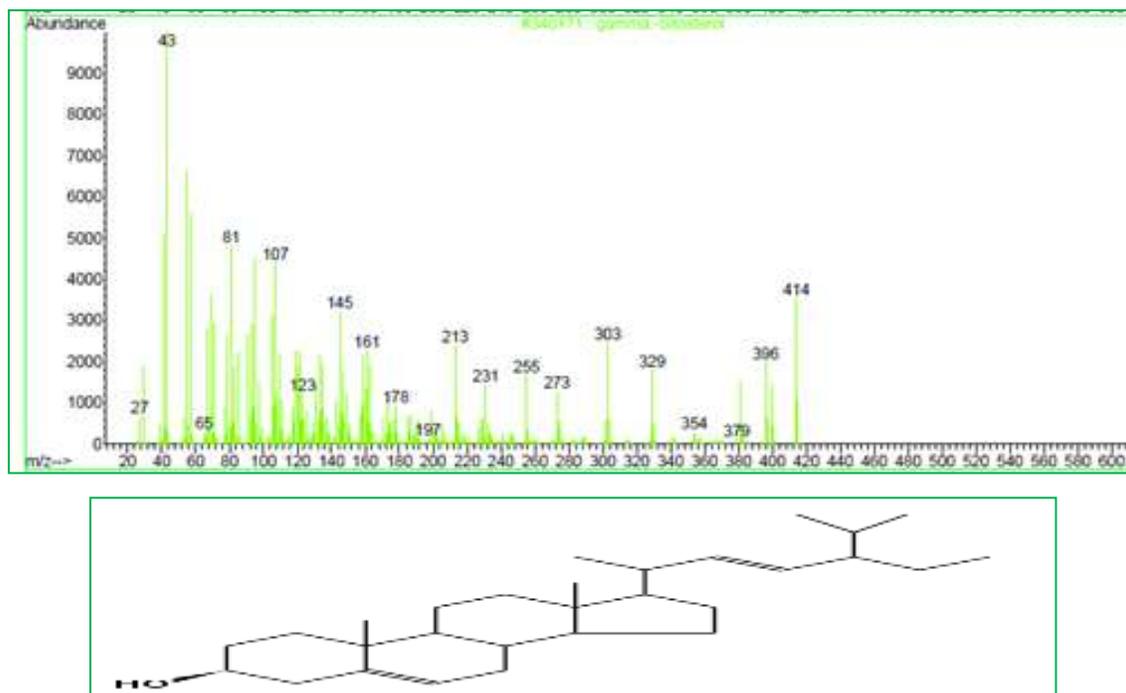


Figure 5: Mass spectrum of Hexadecane, 1-chloro





**Figure 8: Mass spectrum of Gamma Sitosterol**

**Table 1: Components detected in *Amorphophallus campanulatus* Decne tubers.**

S.no.	Name	Molecular formula	Molecular weight	Peak area %	RT
1	Hexadecanoic acid	C <sub>16</sub> H <sub>32</sub> O <sub>2</sub>	256.42g/mol	8.41%	17.75
2.	9,17-octadecadienal (z)	C <sub>18</sub> H <sub>32</sub> O	264.25 Da	3.881%	19.34
3.	Octadecanoic acid (CAS)	C <sub>18</sub> H <sub>36</sub> O <sub>2</sub>	284.47 g/mol	3.304%	19.55
4.	Hexadecane, 1-chloro	C <sub>16</sub> H <sub>33</sub> Cl	260.89 g/mol	0.551%	20.65
5.	Heptacosane, 1-chloro	C <sub>27</sub> H <sub>55</sub> Cl	415.179g/mol	0.685%	23.79
6.	13,17,21Trimethyltrioctane	C <sub>36</sub> H <sub>74</sub>	506.97 g/mol	0.462%	24.2
7.	Nonacasone	C <sub>29</sub> H <sub>60</sub>	408.6 g/mol	0.355%	25.86
8.	Ergost-5-ene	C <sub>28</sub> H <sub>44</sub> O	398.66 g/mol	4.854%	27.47
9.	Stigmasterol	C <sub>29</sub> H <sub>48</sub> O	412.69 g/mol	7.969%	27.72
10.	Gamma.Sitosterol	C <sub>29</sub> H <sub>50</sub> O	414.7067 g/mol	13.887%	28.16

The 10 components were identified in the ethanolic extract of *Amorphophallus campanulatus* Decne tubers by GC-MS in Figure 2,3,4,5,6 and 7. The active components with molecular structure, molecular formula, molecular weight and percentage peak area and retention time are presented in Table 1.

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