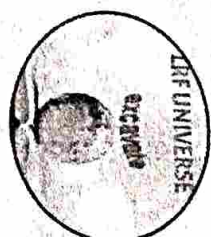




**LRF KANYAKUMARI**  
**MUSLIM ARTS COLLEGE**  
Thiruvithancode, Kanyakumari, Tamilnadu, India.  
**LEMURIA RESEARCH FORUM**



**FIRST INTERNATIONAL CONFERENCE**

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This is to certify that **Dr/M/MS/MS/MS ... S. V. SILLAI. JASMIN., ASSISTANT. PROFESSOR,**  
**DEPARTMENT OF ZOOLOGY, MUSLIM ARTS COLLEGE,**  
**THIRUVITHANCODE** has participated in the 1<sup>st</sup> International Conference  
of Lemuria Research Forum on "Revelations of Submerged Continent" held at **MUSLIM ARTS COLLEGE,**  
**Thiruvithancode, on 13-10-2021** and presented a paper entitled.... **"A Study on the Phyto-**  
**Chemical and nutrient analysis of Actinidia deliciosa**.....

  
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**Theme: REVELATIONS OF SUBMERGED CONTINENT**

முழ்கிய கண்டத்தின் வெளிப்பாடுகள்

**Date: 13-10-2021**



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# “A STUDY ON THE PHYTOCHEMICAL AND NUTRIENT ANALYSIS OF *ACTINIDIA DELICIOSA*”

T.Sherin Mary<sup>1,2</sup>, Dr. J. Vijila Jasmin<sup>1</sup>, M.Ajeema Arshi<sup>2</sup>

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## Abstract

Fruits are an important part of a healthy diet in our daily routine. They are of course naturally low content of calories, sodium, fat, and cholesterol. Stuffed with vitamins, enzymes, minerals, they are very flavorsome and quickly digestible and also may reduce risk for many illnesses. Kiwi fruit has become terribly popular during the past two decades due to its various medicinal properties. Consumer's interest in healthy eating, in the last decades, shifted towards the potential health benefits of fruits. In the present study, the *Actinidia deliciosa* fruit was selected for the preparation of the *Actinidia deliciosa* fruit incorporated Jelly, Jam and Ice cream. The products were prepared using standard procedures. The sensory evaluation of the formulated products was done by 20 selected panel members. The *Actinidia deliciosa* fruit was then subjected to phytochemical analysis, quantitatively and qualitatively. The phytochemical analysis of *Actinidia deliciosa* fruit revealed the presence of bioactive phyto constituents such as flavanoids and alkaloids. Nutrients such as total protein, total carbohydrate, fat, calories, calcium and vitamin-c were also analyzed.

**Key words:** *Actinidia deliciosa*, flavonoids, alkaloids

## Introduction

Kiwi fruit originally grown in mountainous regions of China, kiwi belongs to *Actinidia* genus and it is derived from a deciduous, woody fruiting vine. *Actinidia* species are perennial and present vigorous growth and has climbing and strangling characteristics. (Cangi *et al.*, 2006).

*Actinidia* is a unisexual plant and the resulting fruits are various shaped berries, brown coloured and covered or not with stiff fine hairs. Kiwi fruits may have different colours from bright green to red and weight from 60-70 g to 90-200 g (Peticila *et al.*, 2012).

Kiwifruit are exceptionally high in vitamin C and contain an array of other nutrients, notably nutritionally relevant levels of dietary fibre, potassium, vitamin E and folate, as well as various bioactive components, including a wide range of antioxidants, phytonutrients and enzymes, that act to provide functional and metabolic benefits. The contribution of kiwifruit to digestive health is attracting particular attention owing to a growing body of evidence from human intervention studies. There are several plausible mechanisms of action that are likely to act together including the fibre content and type, the presence of actinidin breaks down protein and facilitates gastric and ileal digestion and other phytochemicals which may stimulate motility. (Kaur L. *et al.*, 2010).

Kiwi's fiber content may also benefit cardiovascular health. A review published in 2017 found that people who consume high amounts of fiber have a lower risk of developing cardiovascular disease. They also tend to have less low-density lipoprotein, or "bad," cholesterol. One kiwi provides around 2 g of fiber, or 6-9% of an adult's daily requirement. (Doddola, *et al.*, 2008)

Motohashi *et al.*, (2002) found kiwi fruit to contain a number of valuable anti-cancer bioactive materials that are prooxidant and antioxidant, as well as having tumour selective, cytotoxic and antimicrobial activity.

Banerjee D., *et al.*, 2019 in his study concluded that when healthy people eat kiwis, their small intestines are better able to retain water, leading to greater stool frequency and softer stool consistency. The study authors suggested that kiwifruit could be a natural alternative to medical laxatives for people with mild constipation.

Kiwifruit contains folate, which is essential for cell division. During pregnancy, doctors advise women to take additional folate, as it may protect the fetus from developmental problems, such as neural tube abnormalities. One kiwi provides around 17.2 micrograms (mcg) of folate, or just over 4% of an adult's daily requirement. (USDA, National Nutrient Database for Standard Reference)

## Materials and Methods

### Collection and Preparation of Sample

The sample used for the proposed study is *Actinidia deliciosa* fruit. The fruit was cleaned under running tap water to remove dirt and dust from the surface. Then the skin was peeled off and cut into small slices. The fruit pulp and the other ingredients used in the study were measured using a weighing machine. The fruit was ground well using a mixer grinder and the pulp was taken and stored in airtight container for further use.

### Phytochemical Analysis

Phytochemical analysis is done to find out the phytochemicals present in *Actinidia deliciosa* fruit. Phytochemical analysis was done qualitatively and quantitatively. Qualitative analysis such as phenolic compounds, flavanoids, alkaloids and steroids were analyzed. The phytochemicals which shows positive in qualitative analysis are subjected

to quantitative analysis such as phenol, flavanoid, alkaloid and steroids.

Nutrient Analysis Nutrients such as calories, total carbohydrate, proteins, fat, vitamin C and calcium were analyzed using standard procedures.

Formulation and Sensory Evaluation of the Formulated Products

Fresh *Actinide deliciosa* fruit was selected for the preparation of the products. Products such as jam, jelly, and ice cream were selected. *Actinide deliciosa* fruit incorporated jam, *Actinide deliciosa* fruit incorporated jelly and *Actinide deliciosa* fruit incorporated ice-cream was prepared using standard procedures. The products were then evaluated by a panel of 20 semi trained panel members from the

#### Qualitative Analysis of Phytochemicals

Sl.No.	Name of test	Sample
1	Phenol	-
2	Flavanoid	+
3	Alkaloid	+
4	Steroid	-

+Presence -Absence

From the above table it is found that the *Actinidia deliciosa* fruit showed the presence of flavanoids and alkaloids and showed the absence of phenol and steroid. The phytochemicals which showed positive in qualitative analysis were subjected to quantitative analysis. The values were analyzed and tabulated.

Quantitative Analysis of *Actinidia Deliciosa* fruit

SL. NO.	Phytochemicals	Sample
1	Flavanoids	155.8
2	Alkaloid	26.375

From the above table it is found that, the *Actinidia deliciosa* fruit has 155.8 $\mu$ g/ mg of flavanoids and 26.375  $\mu$ g/ mg alkaloids. Nutrient Analysis of *Actinidia Deliciosa* Fruit

The nutrients of *Actinidia deliciosa* fruit such as calories, carbohydrate, protein, fat, vitamin c and calcium were analyzed.

NUTRIENTS	AMOUNT
Carbohydrate	17.7 g
Protein	4.95 g
Fat	2 %
Calories	108.6kcal
Vitamin-C	169.11 mg
Calcium	249 ppm

The nutrient analysis for *Actinidia deliciosa* fruit was carried out using standard procedures. The carbohydrate content of *Actinidia deliciosa* fruit was 17.7 g. The protein content of *Actinidia deliciosa* fruit was 4.95 g. The fat content of *Actinidia deliciosa* fruit was 2 %. Calories present in *Actinidia deliciosa* fruit was 108.6kcal. The vitamin-C content of *Actinidia deliciosa* fruit was 169.11 mg and the calcium content of *Actinidia deliciosa* fruit was 125 ppm/mg.

Department of Nutrition and Dietetics, Muslim Arts College, Thiruvithancode, Kanyakumari District. Statistical Analysis

All the above said observation was statically analyzed. The collected data were interpreted through statistical analysis namely mean, standard deviation and standard error mean.

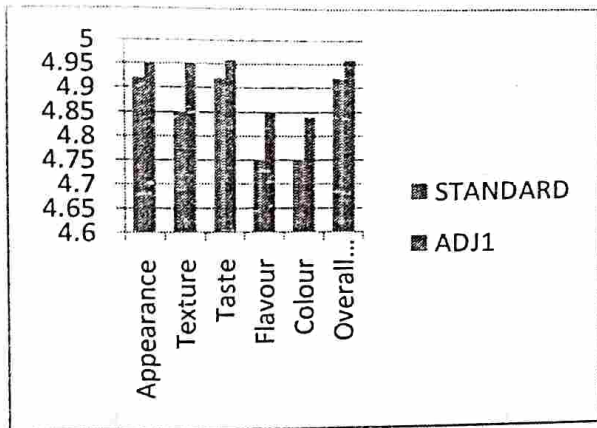
#### Result and Discussion

Characterization of Phytochemical from *Actinidia Deliciosa* fruit

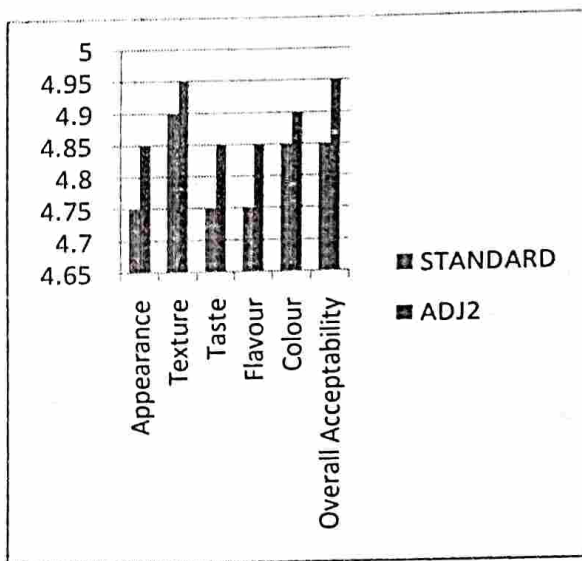
The phytochemical constituents of *Actinidia deliciosa* fruit was analyzed for the presence of secondary metabolites such as phenol, flavanoid, alkaloid and steroid based on the presence and absence of phytochemicals.

Sensory Evaluation

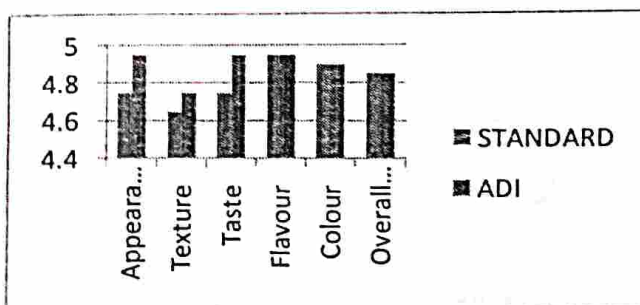
Sensory parameters of standard jam and *Actinidia deliciosa* fruit incorporated jam



Sensory parameters of standard jelly and *Actinidia deliciosa* fruit incorporated jelly



Sensory parameters of standard ice cream and *Actinidia deliciosa* fruit incorporated icecream



Conclusion

The results of the present study indicated that *Actinidia deliciosa* fruit (Kiwi Fruit) is rich in various phytochemicals and has several nutritional importance. Kiwi fruits are very beneficial for health and have various health benefits. The kiwi fruit also prevents and treats various diseases. This could be attributed to the fact that it has high amount of phytochemicals such as flavanoids and alkaloids, and macronutrients such as carbohydrate, protein, fat, and micronutrients such as calcium and vitamin-C. Different types of food products can be prepared using *Actinidia deliciosa* fruit and it is socio-economic friendly. The *Actinidia deliciosa* fruit can be consumed by all the age groups and all types of diseased patients.

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