



**Traditional Fermented Bamboo Shoot  
&  
The Rich Culinary Heritage  
of North East India**

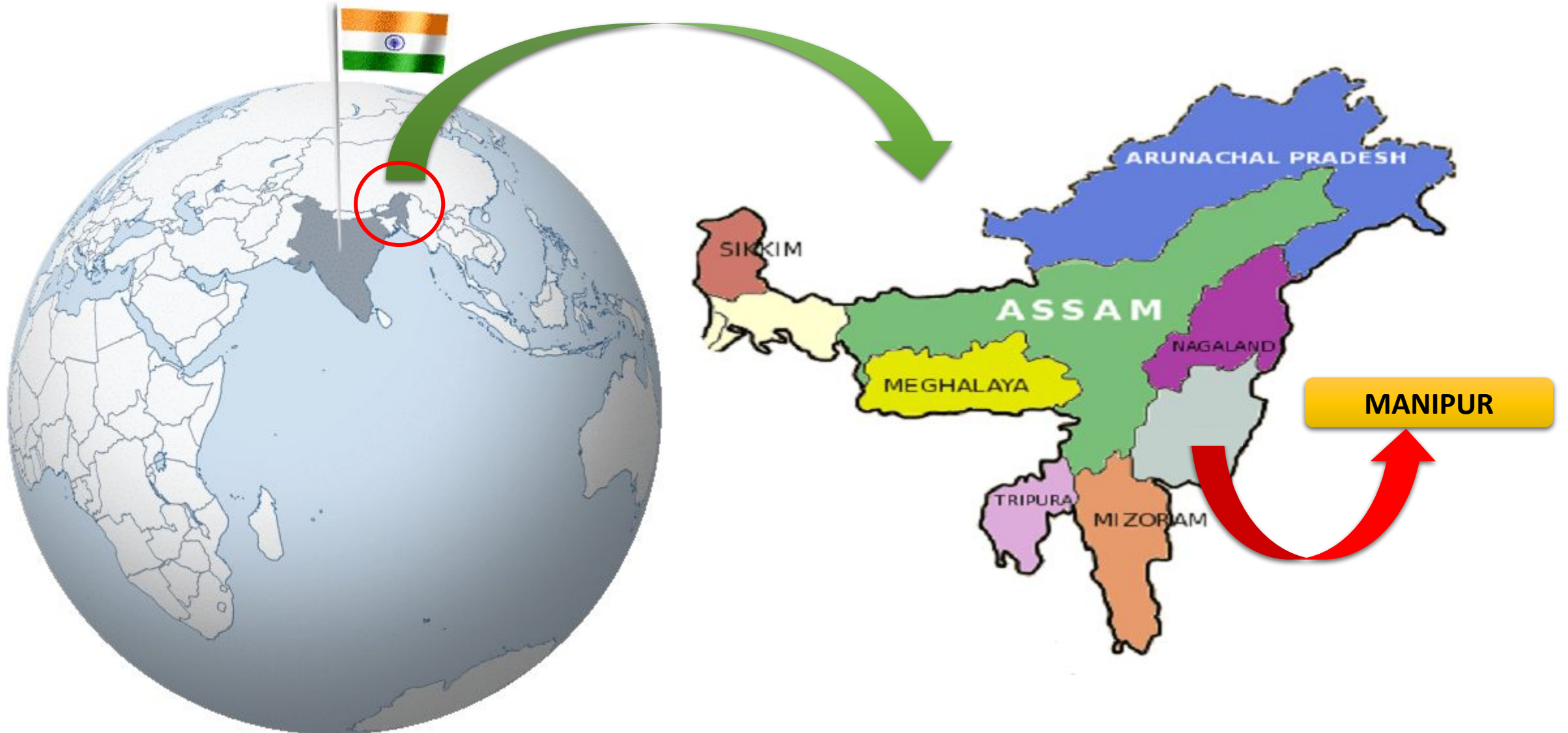
**Dr. Santosh Oinam**

Department of Botany  
Panjab University, Chandigarh  
India 160014  
[santoshoinam@gmail.com](mailto:santoshoinam@gmail.com)



# The North East India

Easternmost corner of the vast Indian subcontinent





# MANIPUR

An aerial photograph of Loktak Lake in Manipur, India. The lake is filled with numerous circular and rectangular floating islands, known as phumdis, which are covered in green vegetation. The water is a deep blue color. In the background, there are rolling hills and mountains under a clear sky. The overall scene is a vast, scenic landscape.

**LOKTAK LAKE**

*Largest freshwater lake in South Asia*



# KHANBA-THOIBI DANCE





# RAAS LEELA DANCE





# **BAMBOO**

*in Manipuri called*

**“WA”**

*laterally means fulfillments  
of Human needs*





# LAI HARA OBA





# EPAN THABA CEREMONY

The first ceremony after birth for Meetei Community observed on 6th day after child birth





# PHIRUK/PHINGARUK







# **108 TRADITIONAL DISHES OF MANIPUR**



# BAMBOO SHOOT





# FERMENTED BAMBOO SHOOT





# Traditional Fermented Bamboo Cuisines of North East Region of India



*Soijin-Eromba*  
*Manipur*



*Pika Pila*  
*Arunachal Pradesh*

State	Cuisine	Preparations
<b>Arunachal Pradesh</b>	Perok-Ikung	Ikung (fermented) bamboo shoots prepared with fried or boiled chicken and spices
	Yekdin-Ikung	Fermented bamboo shoots fried or boiled with pork by adding other spices
	Engo-Ikung	Fermented bamboo shoots boiled with fish and combination of various spices
	Pika Pila	Fermented bamboo shoot prepared with pork
<b>Assam</b>	Khorisa Maas	It is a fish curry with grated fermented bamboo shoots.
<b>Manipur</b>	Usoi-Ooti	Sliced bamboo shoots (Bambusa nutans) and dried pea soaked in water overnight then boiled with a pinch of sodium bicarbonate
	Usoi-kangsu	Overnight water-soaked bamboo slices boiled with potato and mixed with fried fermented fish and dried chilies
	Soijin-eromba	Fermented bamboo shoots boiled with potato and mixed with fermented fish and dried chilies.
	Ngakra-Soijin Thongba	Fermented bamboo shoot (Soijin) and cat fish cooked with oil and spices.
<b>Mizoram</b>	Arsa Buhchiar	Fermented bamboo shoots are cooked with pork and spices to create a flavourful aromatic curry.
<b>Meghalaya</b>	Lung-seij	Khasi people of Meghalaya savor pungent chutney prepared from fermented bamboo shoots, tungtap (fermented fish) and assorted spices
<b>Nagaland</b>	Bastanga	A fiery and tangy delicacy of fermented bamboo shoot that packs a punch, often accompanying Naga meals
<b>Sikkim</b>	Tama Curry	It is a fermented bamboo shoot curry which is a staple dish of Sikkimese consumed with steamed rice.
<b>Tripura</b>	Moiya Koshak-Shidal	Fermented bamboo shoots with fermented fish (shidal)
	Chakkhoi	Fermented bamboo shoots mixed with other vegetables



# BAMBOO SHOOT FERMENTATION





# DIFFERENT FORMS OF FERMENTED BAMBOO SHOOT



*Slice*



*Shredded sun dried*



*Whole shoots*



*Crushed paste*



**Traditional method of  
Bamboo Shoot fermentation  
by the Meitei community of  
North-East India**





**1**

## **D HARVESTING AND CLEANING OF SHOOTS**





**2**

## **D SLICING OF BAMBOO SHOOTS**





**3**

## **D SLICED BAMBOO SHOOTS IN BAMBOO BASKET**





4

## D ANTINUTRIENT REMOVAL





**5**

## **D COLLECTION OF FERMENTED SHOOTS**





6

## MARKET OF FERMENTED SHOOTS



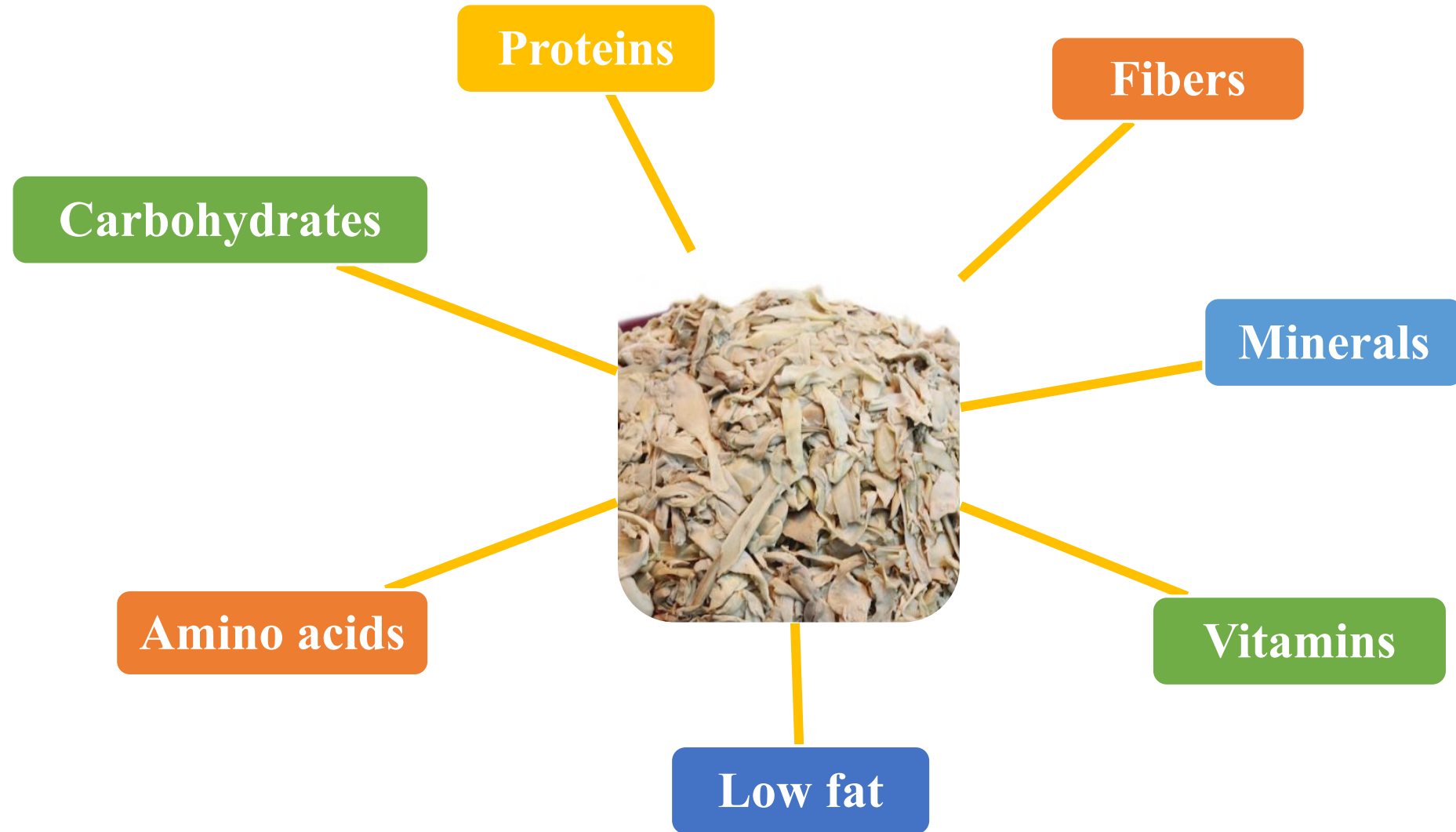


# Traditional fermented processed bamboo shoot product of North East India

State	Tribes	Products	Method	State	Tribes	Products	Method	
Assam	Assamese, Garo, Rabha	Poka khorisa, Khorisa tenga	Shoots of <i>B. balcooa</i> and <i>D hamiltonii</i> mixed with dried <i>Garcinia pedunculata</i> and dried chillies, packed in pre-smoked earthen pot tied with banana leaves and allowed to ferment for 4-12 days	Manipur	Meitei	Soibum,	Sliced shoots are allowed to ferment in an airtight bamboo basket with the removal of exudates from a hole in the bottom of the container	
	Dimasa	Miya mikhri	Sliced shoots wrapped in banana leaves and allowed to ferment in an earthen pot for 4-5 days				Soijin, Soidon	Sliced shoots are allowed to ferment in an earthen pot
	Garó, Rabha	Miya mecheng, Jim tenga	Shoots are cut into small pieces and allowed to ferment for 5-6 days in a jar or container with very little amount of water sprinkled	Meghalaya	Khasi	Lung-seij	Sliced shoots are fermented in a bamboo basket	
	Hrangkhól, Baite, Hmar	Tuaithur	Sliced shoots are allowed to ferment in an airtight bamboo basket, decanted continuously for 2-3 days so that very little water is left and allowed to ferment for 6-7 days				Pdam	Tender shoots are fermented inside a plastic or a glass bottles dipped in water
	Arunachal Pradesh	Apatani, Nishi	Hirring Hitch, Hitak, Iku, Heccha, Hikku		Sliced shoots flattened by crushing and fermented in a bamboo basket wrapped tightly with leaves for 1-3 months	Nagaland	Lotha Naga	Bastanga, Rhujuk
	Adi, Apatani, Nishi	Ekung, Iku, Hikku	Chopped shoots fermented in a bamboo basket covered with banana leaves laid into a pit near river stream for 6-8 days with heavy weight on top to remove excess water and fermented for 1-3 months	Sikkim	Gorkha	Mesu	Sliced shoots of <i>D. hamiltonii</i> , <i>B. tulda</i> and <i>D. sikkimensis</i> are pressed airtight in a bamboo vessel covered with bamboo leaves or wild plants for 7-15 days	
	Galo	Kupe	Sliced shoots pressed in an airtight bamboo basket wrapped with locally available leaves of <i>Phrynium</i> sp, removed excess liquid and placed near river stream or within the pit for 15-30 days	Tripura	Chakma, Debbarma, Uchoi,	Moiya koshak, Midukeye	Shoots of <i>M. baccifera</i> and <i>M. bambusoides</i> are wrapped in banana leaves tied with bamboo strip and allowed to ferment for 2-3 days placing in a raised platform undisturbed	
		Eeku	Hard internode portion of young shoots are sliced and fermented in an airtight container for 15-30 days			Chakma	Mellye amiley	Shoots are soaked in water for two days in the earthen pot before fermentation
						Uchoi	Moiya pangsung	Whole shoots are fermented in a water-filled container for two nights

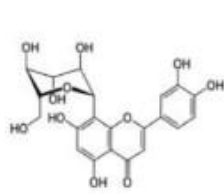


# Nutritional profile of fermented bamboo Shoots

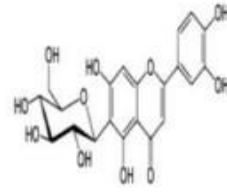




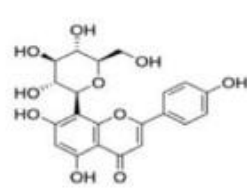
# Bioactive compounds of fermented bamboo Shoots



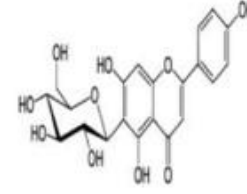
Orientin



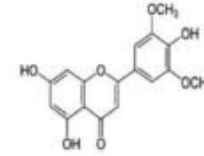
Isoorientin



Vitexin

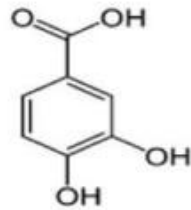


Homovitexin

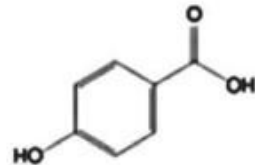


Tricin

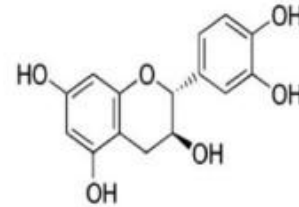
## Flavanoids



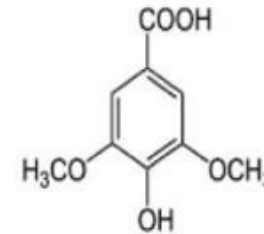
Protocatechuic acid



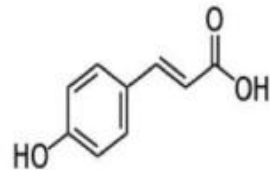
p-Hydroxybenzoic acid



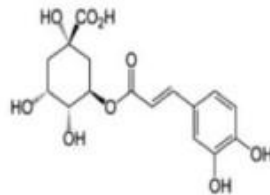
Catechin



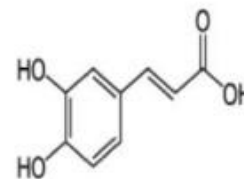
Syringic acid



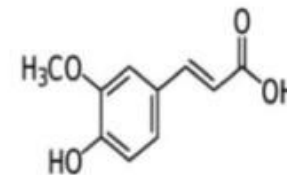
p-coumaric acid



Chlorogenic acid



Caffeic acid

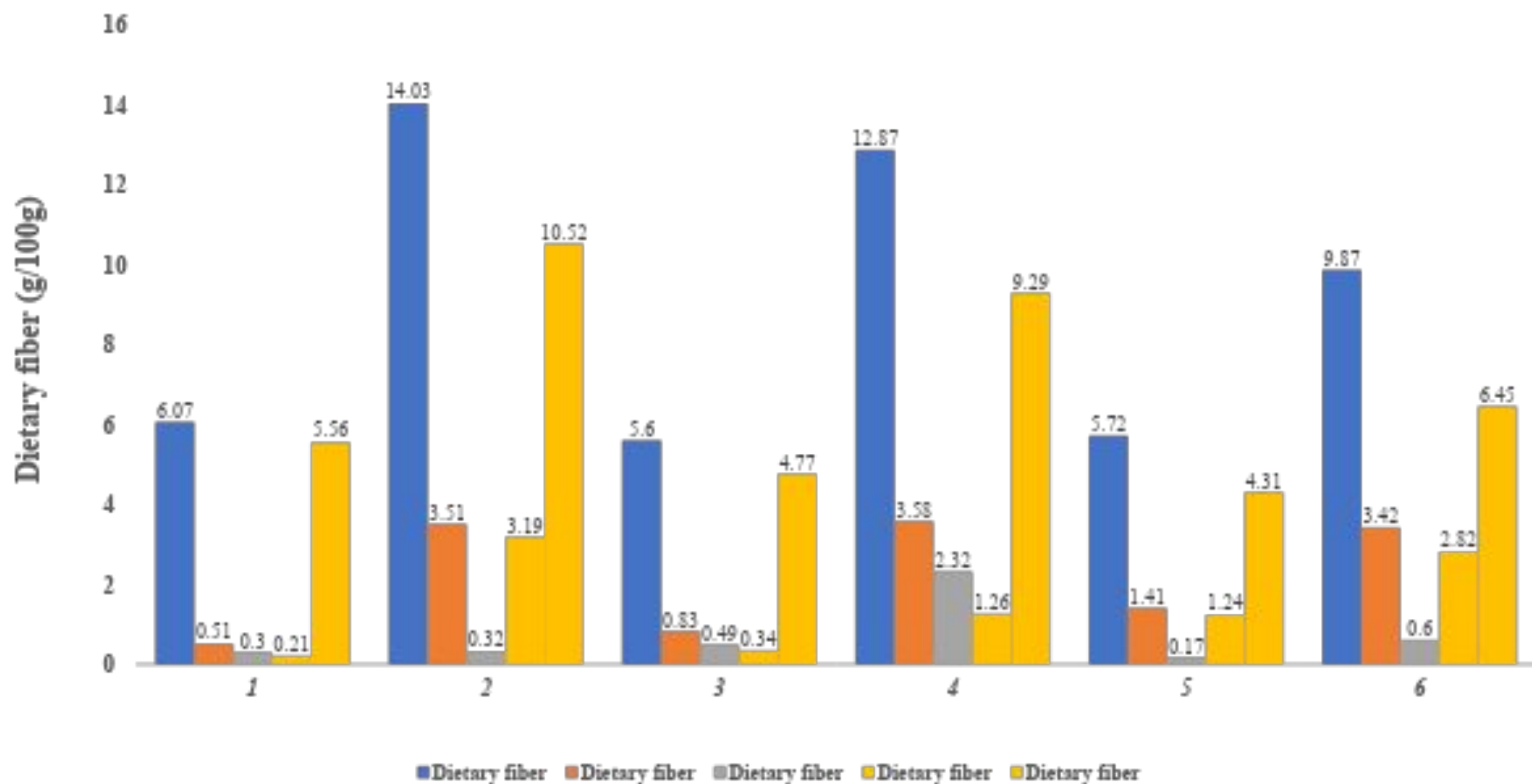


Ferulic acid

## Phenols

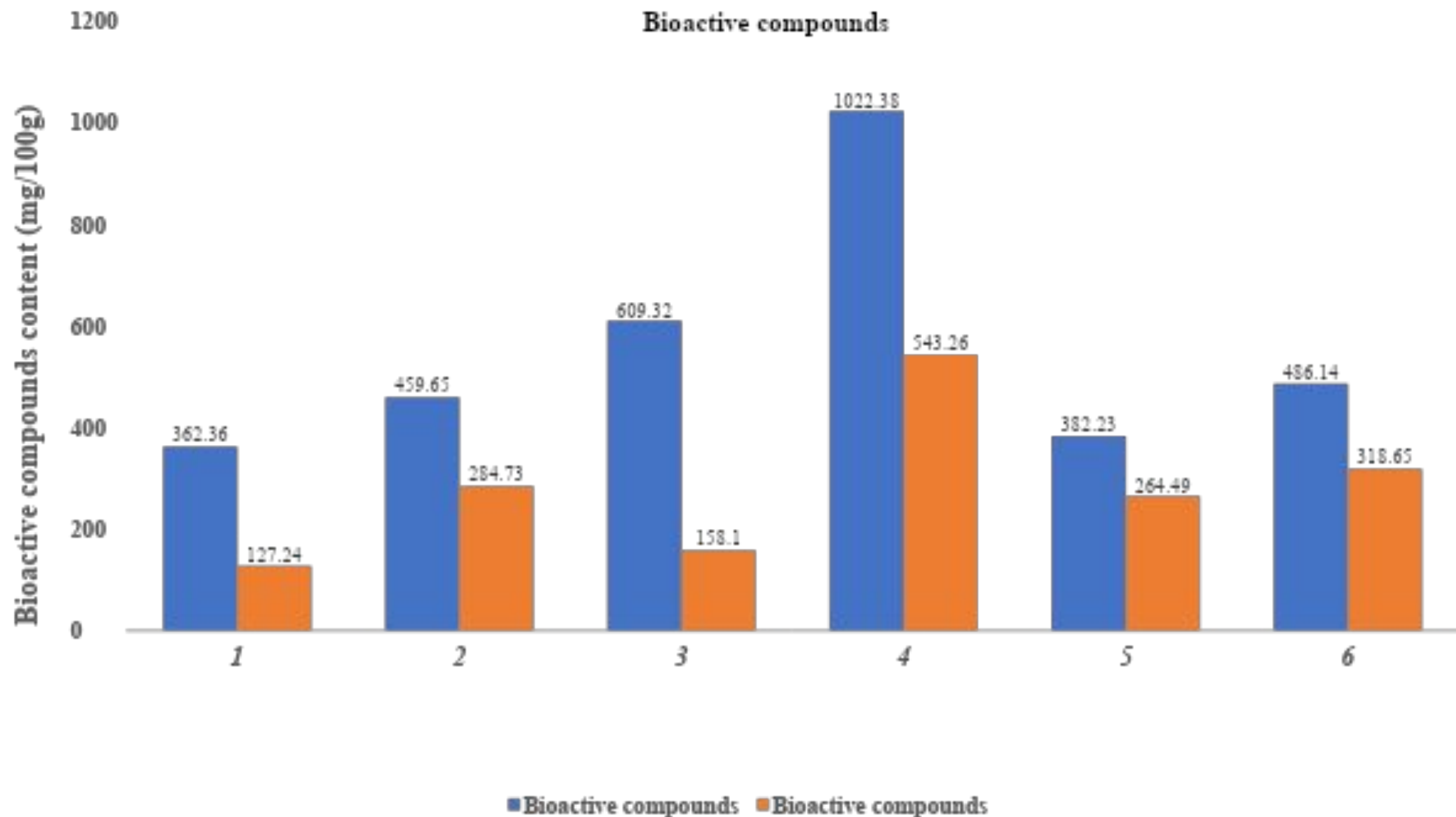


## Dietary fiber



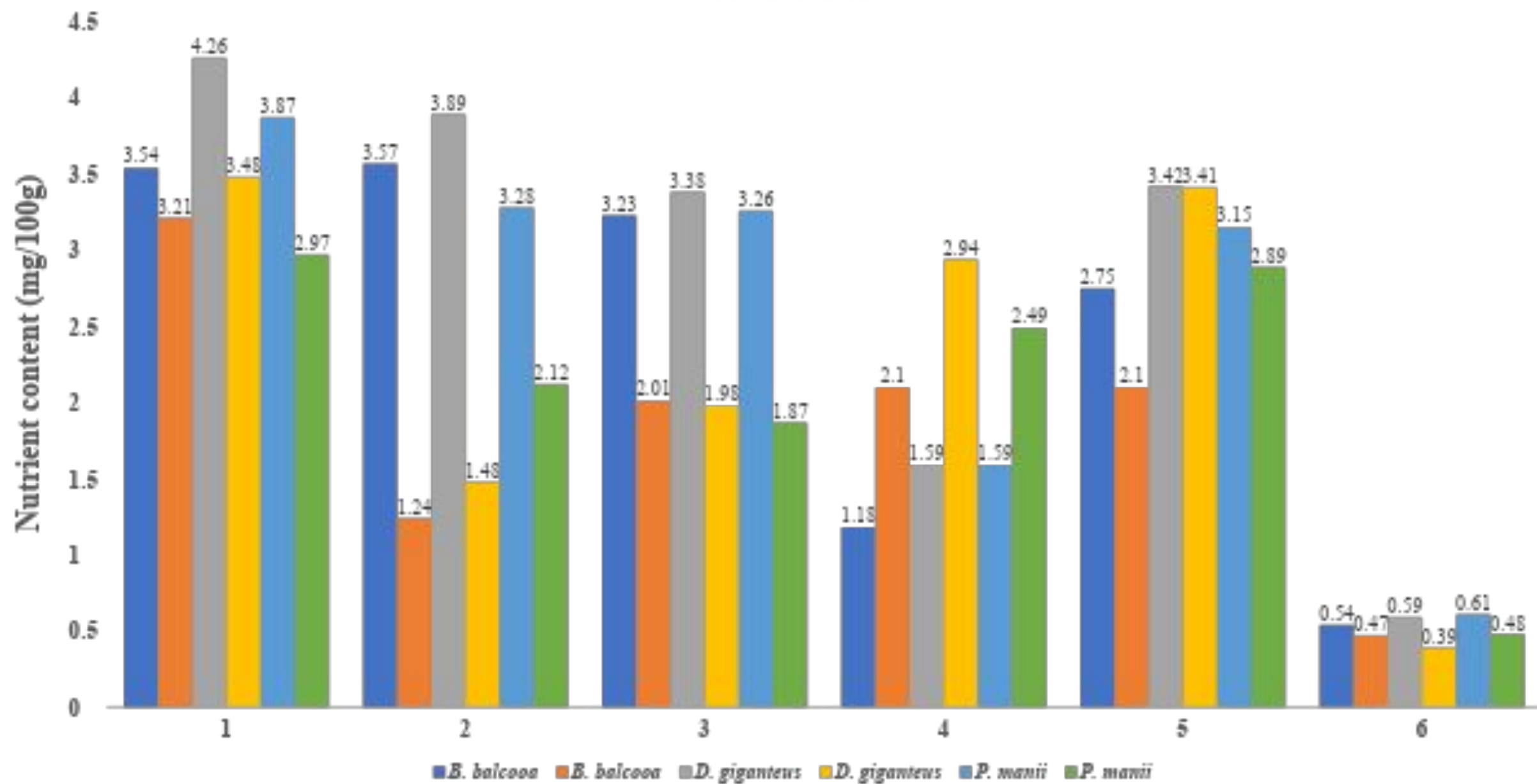


Bioactive compounds





Nutrient content







# Benefits of Fermented Bamboo Shoots

Overcome seasonality constraints

Improving nutritional value

Increase in dietary fiber, phenolic and phytosterol content

Added benefits of enhancing flavour, increased digestibility

Several health benefits and pharmacological values



# ARUNACHAL PRADESH

## *Traditional Bamboo Shoot Cuisines*



*Hirin* (fermented shoot)



*Hikhu* (fermented shoot)



*Hiyi* (dried shoot)



*Pika Pila*  
(Dish with bamboo and pork)



# ASSAM

## *Traditional Bamboo Shoot Cuisines*



*Khorisa Maas*



*Khorisa dia Murgir Mangso*



# MANIPUR

## *Traditional Bamboo Shoot Cuisines*



*Soibum Eronba*



*Usoi Ooti*



# MEGHALAYA

## *Traditional Bamboo Shoot Cuisines*



*Lung-seij*



*Lung-seij with chicken*



# CONCLUSION

**Fermentation:  
An Age-Old Tradition**

**A Symphony of Flavors:  
Regional Specialties**

**Beyond Taste:  
A Cultural Cornerstone and a  
Legacy to Preserve**

**A Superfood for the Future**





# ACKNOWLEDGEMENT



**Ned Jaquith**  
FOUNDATION



**American  
Bamboo  
Society**





**Thank  
You**