
WELCOME

8th International Conference on Mushroom Biology and Mushroom Products

EVALUATION OF MUSHROOM VARIETIES SUITED FOR KUTTANAD THROUGH PARTICIPATORY TECHNOLOGY DEVELOPMENT

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Dedicated to

Farmers, Mushroom Club

Rice Research Station, Moncompu

And

Dr. George V. Thomas (Former Director)

Central Plantation Crops Research Institute

Kasargod, Kerala, India.

INTRODUCTION

Kuttanad - Geographical Distribution

Rice Bowl of Kerala

Area : **35500 Hectrares**

69 Panchayaths : **Alappuzha, Kottayam and Pathanamthitta Districts**

Features	**:**	**0.5 – 3m <MSL**
Climate	**:**	**Tropical Humid Monsooon**
Annual Mean Temperature	**:**	**27.6 îC**
Annual Rainfall	**:**	**2746 mm**
Humidity	**:**	**>85%**
Total Rice production	**:**	**1.6 - 1.75 Lakh tonnes**
Total Straw production	**:**	**2.25 - 2.5 Lakh tonnes**

Kuttanad Ecosystem

Straw Utilisation

- **Left in the field for soil incorporation**
- **Burning of straw**

Viable alternative - Mushroom Cultivation

Conversion of Agro waste – Protein rich food

Aim of present study:

- To evaluate mushroom types best suited for Kuttanad for Rainy and Summer Season based on
  - Participatory Technology Development
  - Nutrient Analysis
  - Consumer Survey

MATERIALS AND METHODS

I. Identification of Mushroom Types Suitable for Kuttanad

A. Varieties from KAU used for PTD trial

1. ***Pleurotus florida (white oyster)***
2. ***P.eous (pink oyster)***
3. ***Hypsizygus sp. (blue oyster)***
4. ***P. sajor-caju*** **(grey oyster)**
5. ***Calocybe indica (milky mushroom)***

Identification: Dr. D. Geetha , Professor,
College of Agriulture, Vellayani

1.. Pleurotus florida
(white oyster)

2. P.eous
(pink oyster)

3.Hypsizygus sp
(blue oyster)

4.P. sajor-caju
(Grey oyster)

5. *Calocybe indica*
(milky mushroom)

B. Selection of farmers

i) Over two year experience in mushroom farming

ii) Recommendation of concerned Krishi Officer

iii) Recommendation of Selection Committee

C. PTD Trial

Design of Experiment	:	CRD Factorial
Substrate used	:	Paddy straw
Type of sterilization	:	Chemical
Technique used	:	Multi layered spawning
Weight of mushroom bed	:	One kilogram dry straw
Mushroom shed	:	6m × 4m
Condition	:	Natural

a. Rainy season (June - July, 2012)

Number of locations : 10

Number of treatments : 3 (varieties)

Number of replications : 6 (beds)

Varieties

1. Pleurotus florida (white oyster)

2. P.eous (pink oyster)

***3. P. sajor-caju* (Grey oyster)**

a. Summer season (April - May, 2013)

Number of locations : 10

Number of treatments : 5 (varieties)

Number of replications : 6 (beds)

Fields of PTD Trial

Sri. Musthafa, Alappuzha, Sri. Ouseppachan, Veliyanadu

Smt. Jolly Chamapakulam, Smt. Sreelatha, Budhanoor

OBSERVATIONS RECORDED

- Yield
- Number of days for completion of spawn running
- Number of days for first harvest
- Interval between first and second harvest
- Interval between second and third harvest
- Cropping period
- Biological efficiency
- Mean maximum temperature of mushroom shed
- Mean minimum temperature of mushroom shed
- Mean relative humidity

Weather Factors : Mean maximum temperature, Mean minimum temperature, Mean relative humidity, Total rainfall, Total number of rainy days.

II. Nutrient Analysis of Mushroom

- Chemically sterilised substrate
- Substrates used - Paddy straw, rubber wood sawdust Banana pseudostem
- Analysis (payment basis) - Quality Control Lab, Central Institute of Fisheries Technology, Kochi, Kerala
- Method followed : AOAC
- Parameters tested : Carbohydrate, Protein , Fat, Fibre, pH

  Minerals : Sodium, Potassium, Calcium, Iron Magnesium, Zinc, Selenium, Molybdenum

III. CONSUMER SURVEY

Mushroom consumption – varietal preference

- Sample size : 100
- Location : Kottayam and Alappuzha Districts
- Supported by : Members, Mushroom Club,
  Rice Research Station, Moncompu
  Alappuzha, Kerala

RESULTS

PTD Trial: 1. Rainy Season : June-July, 2012

Yield and Biological Efficiency of Mushrooms

Sl. No	Mushroom	Yield (gm)	Biological efficiency (%)
1	***Pleurotus florida***	*768.33*	*76.8*
2	***Pleurotus eous***	***944.4***	***94.5***
3	***Pleurotus sajor-caju***	*405.5*	*40.6*
	CD value	**72.8**	**6.78**

Mushroom shed characters:

Mean Max. Temperature : 24±2îC

Mean Relative Humidity : 90%

Weather Factors

Mean max. temperature - 30.75îC

Mean relative humidity - 82.45%

Total rainfall - 238.15 mm

Total number of rainy days - 34

Other Observations of PTD Trial

Sl. No	Varieties	For spawn running	For 1st harvest	Interval 1st and 2nd harvest	Interval 2nd and 3rd harvest	Cropping period
1	*Pleurotus florida*	16	19	8	6	47
2	*Pleurotus eous*	10	12	6	7	*46*
3.	*Pleurotus sajor-caju*	20	25	10	8	43

- In days
- Spawn used:First generation

Table 3. Yield Data of Mushroom - Summer season

Sl. No	Name of Mushroom	Mean Yield (gms)	Biological Efficiency (%)
1	*Pleurotus florida*	570	57
2	*P.eous*	790	79
3	*Calocybe indica*	800	80
4	*Hypsizygus sp.*	632	63.2
5	*P.sajor-caju*	610	61
	CD value	50.21	6.8

Mushroom shed characters

Mean max. temperature : 34±2îC

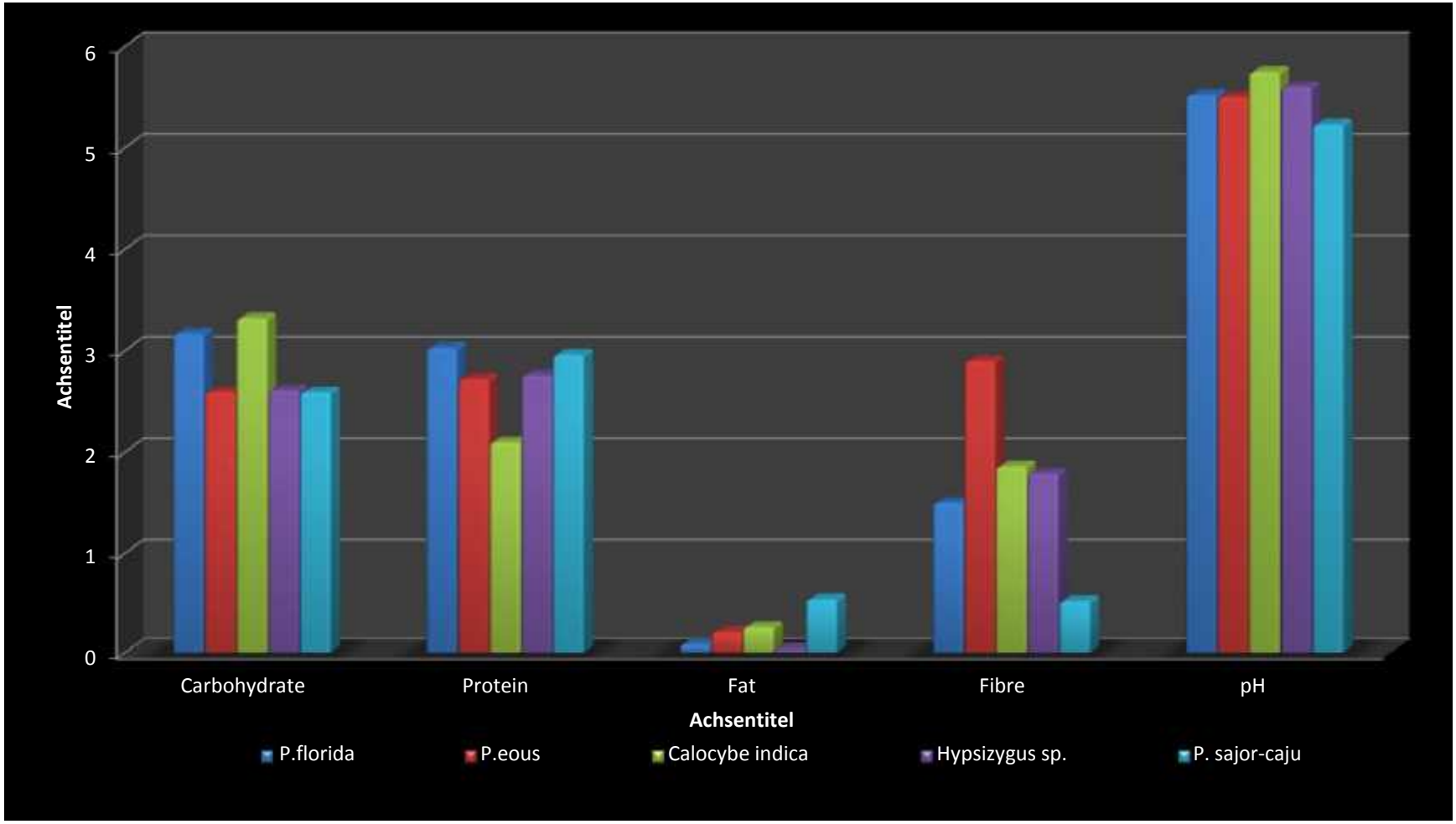
Mean relative humidity : 68%

Weather Factors

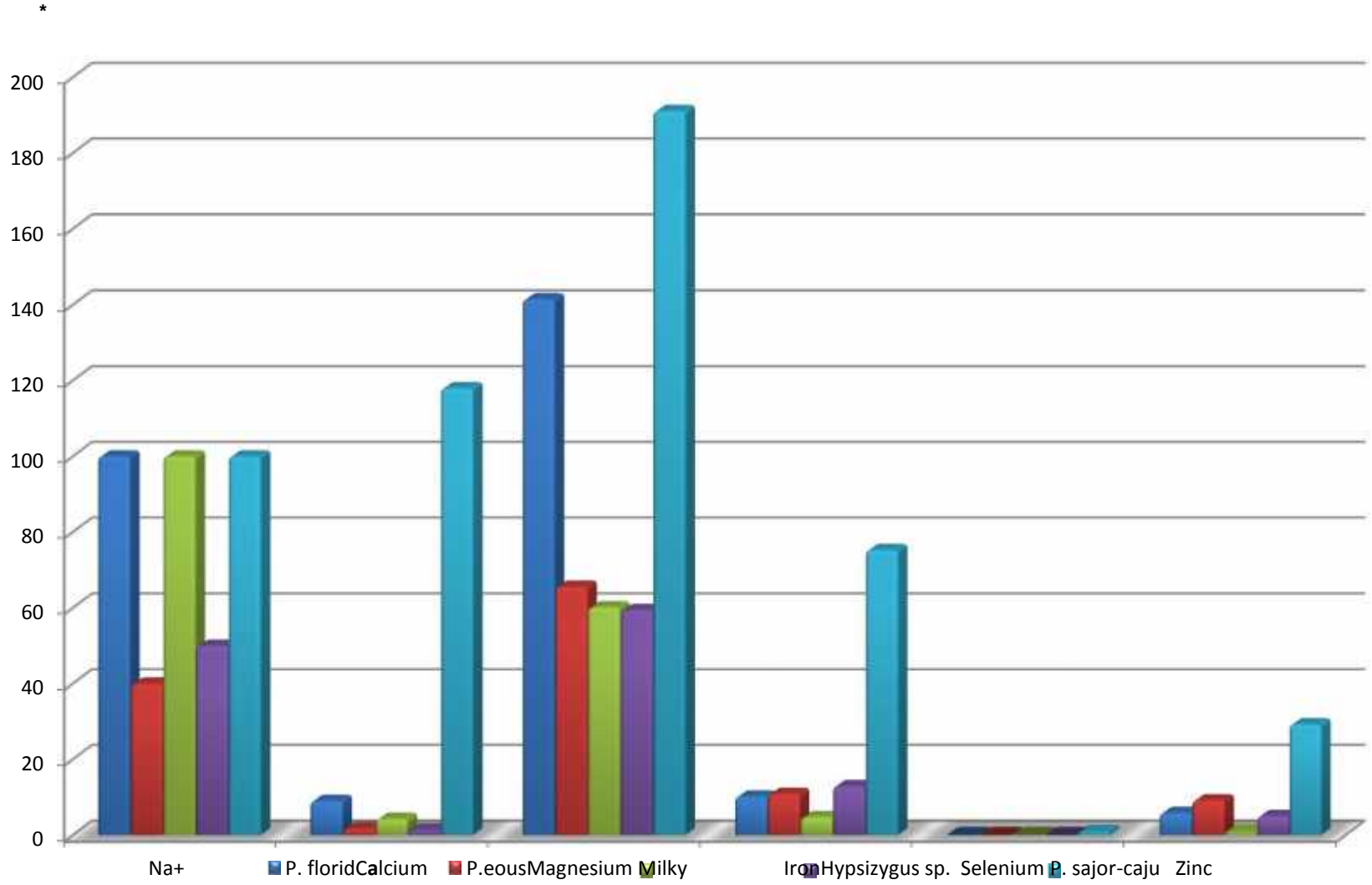
Mean max. temperature - 30.75 îC
Mean relative humidity - 82.45%
Total rainfall - 238.15 mm
Total number of rainy days - 34

Relative Concentration of Nutritional Factors of Mushroom types Cultivated in Kuttanad

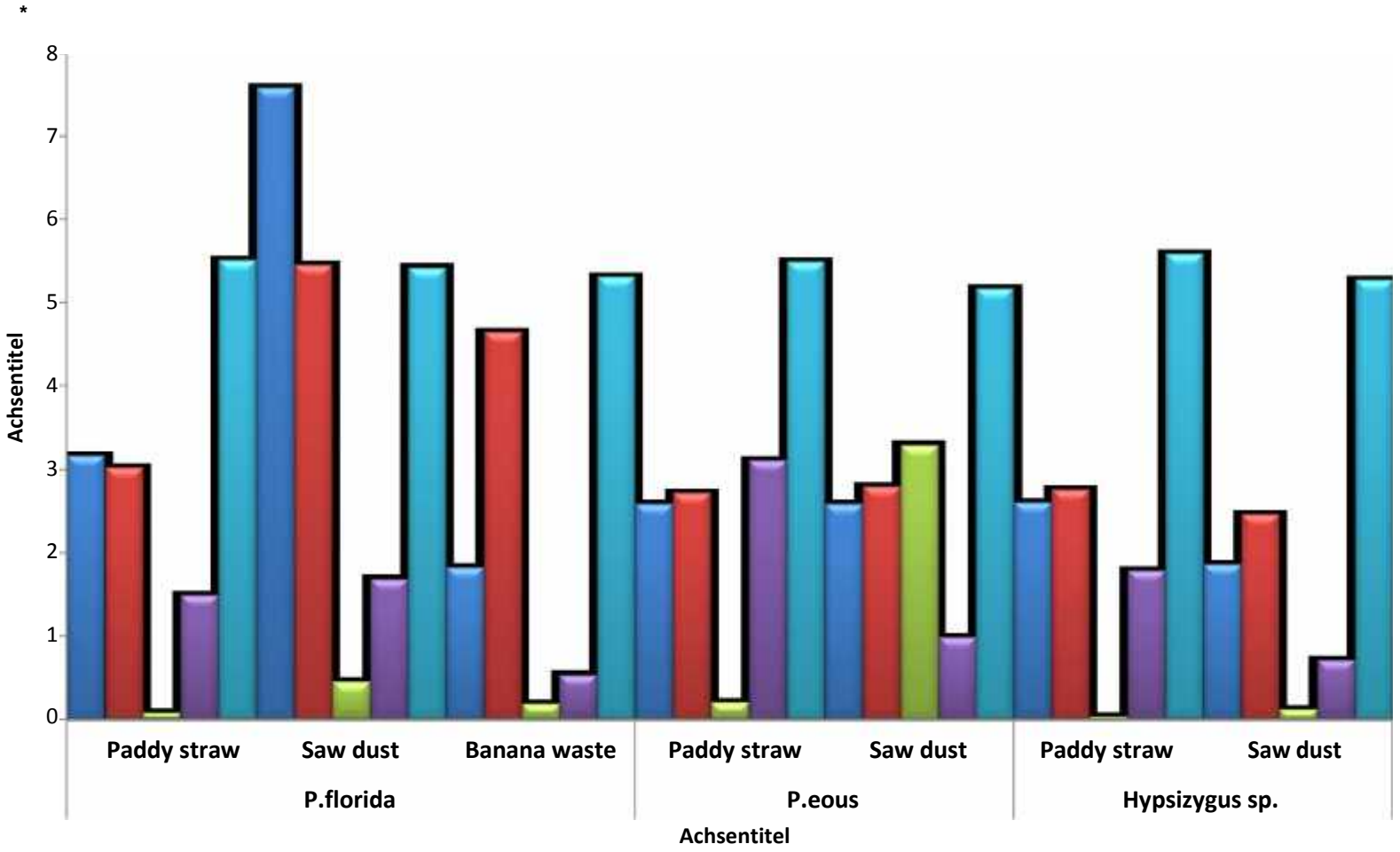
*



Relative Concentration of Minerals in Mushroom types Cultivated in Kuttanad

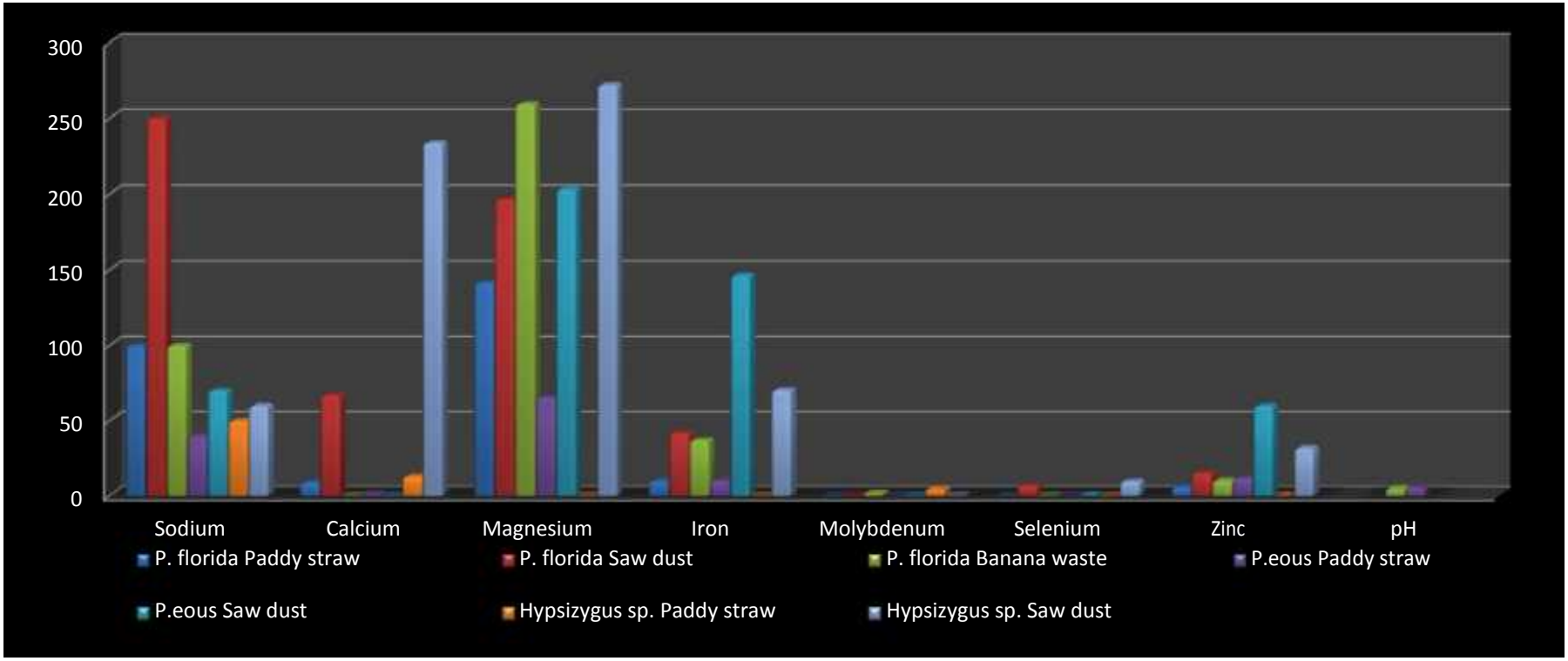


Relative Concentration of Nutritional Factors in Fruit Bodies of *Pleurotus florida* and *P.eous* upon cultivation on variable substrates

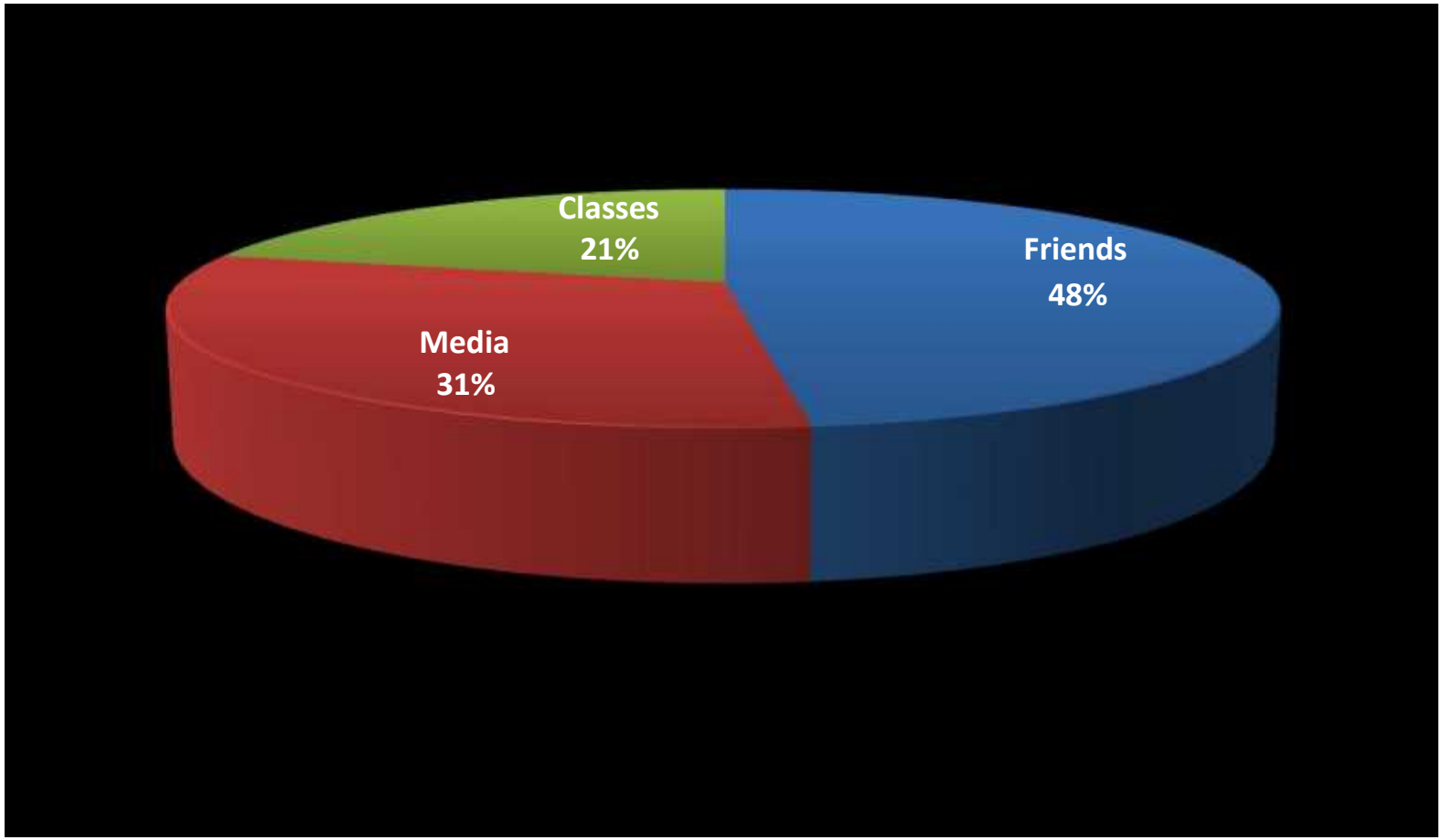


Relative Concentration of Minerals in Fruit Bodies of *Pleurotus florida* and *P.eous* upon cultivation on variable substrates

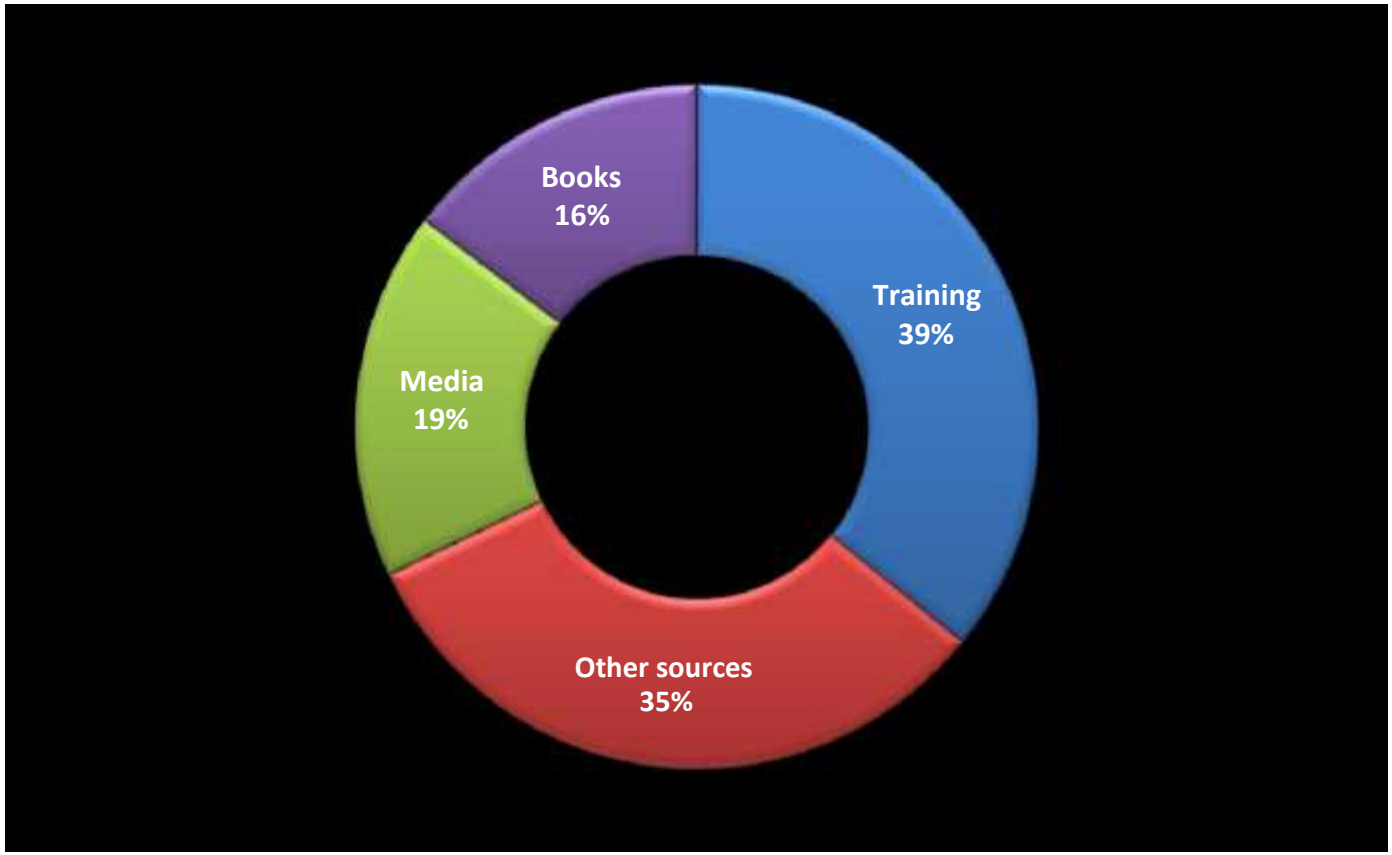
*



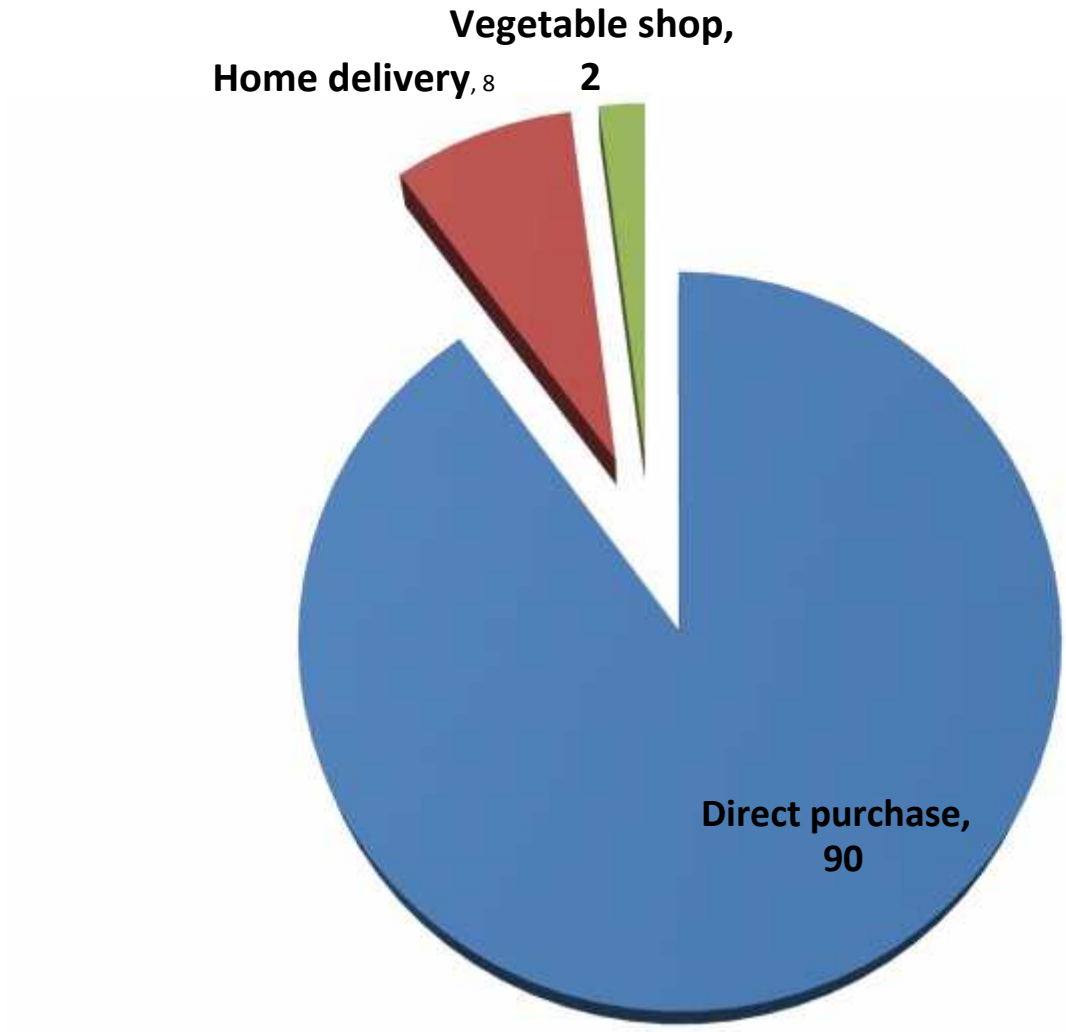
Motivation for Consuming Mushroom



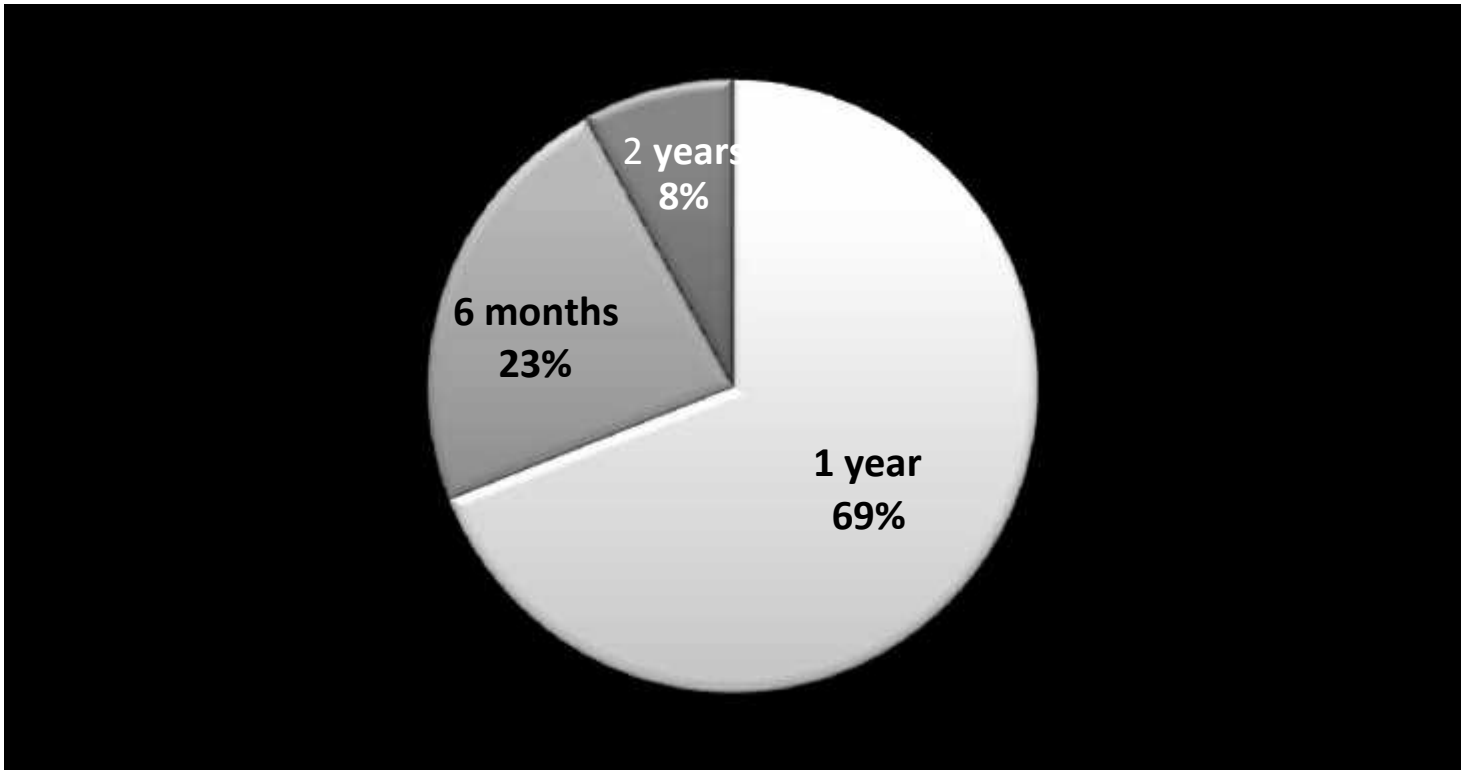
Source of Information about Medicinal Value of Mushroom



Source of Purchase of Mushroom



Period of Utilisation of Mushroom

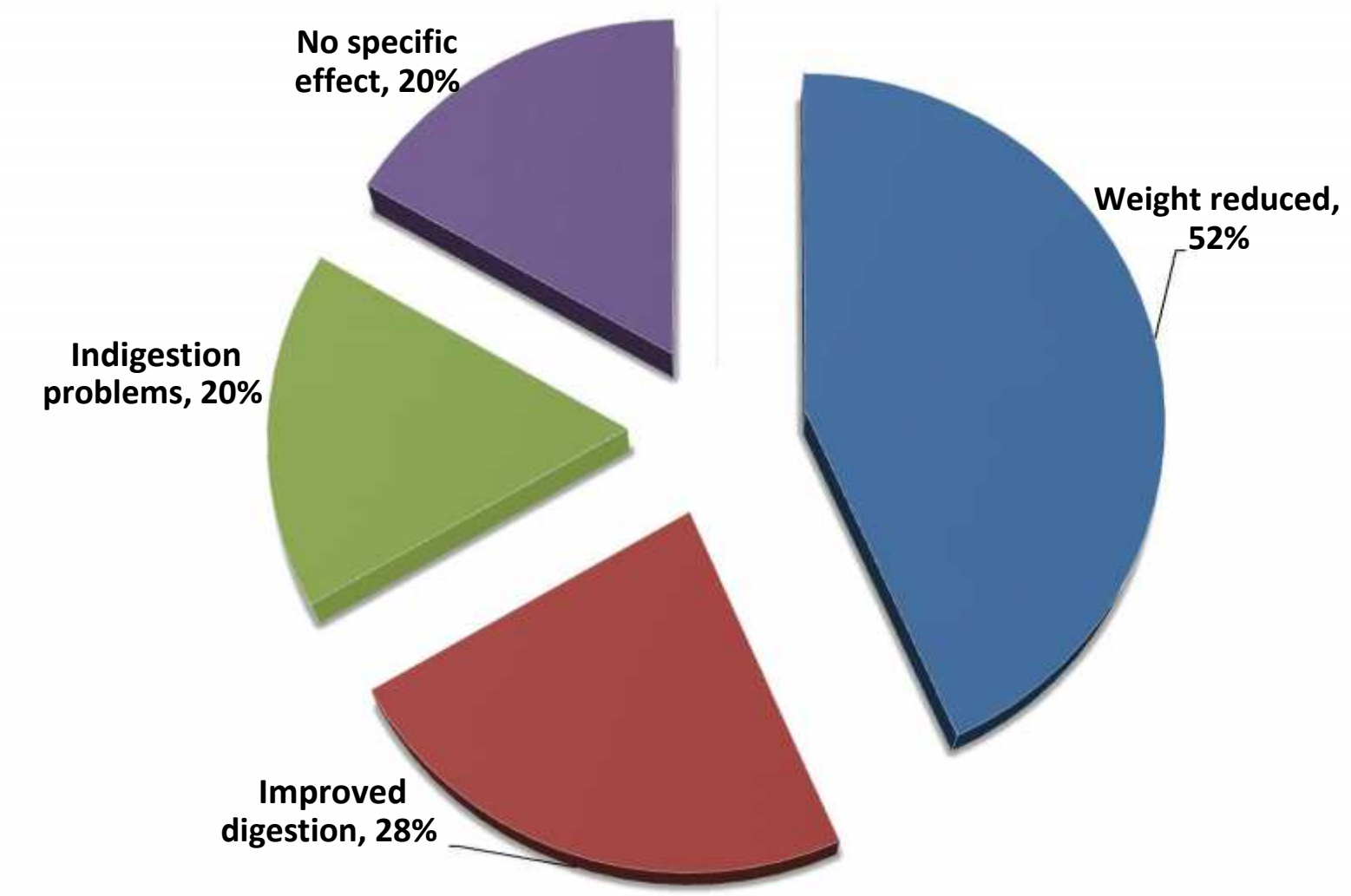


Type of Mushroom Dishes Prepared

Sl.No	Form of curry	Frequency (n=100) *	Rank
1	Thoran	100	1
2	Theeyal	61	2
3	Soup	30	3
4	Fried	7	4
5	Other curry	5	5

* Multiple response

Benefits of Consumption



RESEARCH HIGHLIGHTS

- Identified *Pleurotus eous* (pink mushroom) the most suited mushroom variety for cultivation - rainy season in Kuttanadu region of Kerala state - average yield of 875.5g/bed.
  - Minimum period for completion of spawn running - 10 days
- *Pleurotus eous* and *Calocybe indica* – *most suited for* summer season
- Nutrient status of mushrooms harvested from the same substrate ie, paddy straw varied with mushroom types.

- Paddy straw - Highest concentration of proximates
  - Milky mushroom - Carbohydrate
  - *P.florida* - Protein
  - *P.eous* - Fibre
- pH - 5 to 6
- Rubber wood sawdust - recommended for cultivation of *P.florida and P.eous*
  - Proximates - higher quantity
  - Presence of Selenium (antioxidant)

Consumer survey

- **Friends** - the major source of motivation for consumption.
- ***P.florida*** - first - mushroom consumption.
- **Trainings** - major source of inspiration information in medicinal value.
- Sale price of mushroom - **Rs. 200/kg** (91 per cent).
- mushroom purchase - **directly from the farmers** (90 per cent)
- Recipe **-** **Thoran** - 100 per cent
- Consumption by all family members - **100 per cent.**

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     Assistant Professor (SS) ,COA Vellayani

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THANK YOU