HIGH FIBER COOKIES MADE FROM PINK GUAVA (*PSIDIUM GUAJAVA*) DECANTER/ AGRO WASTE

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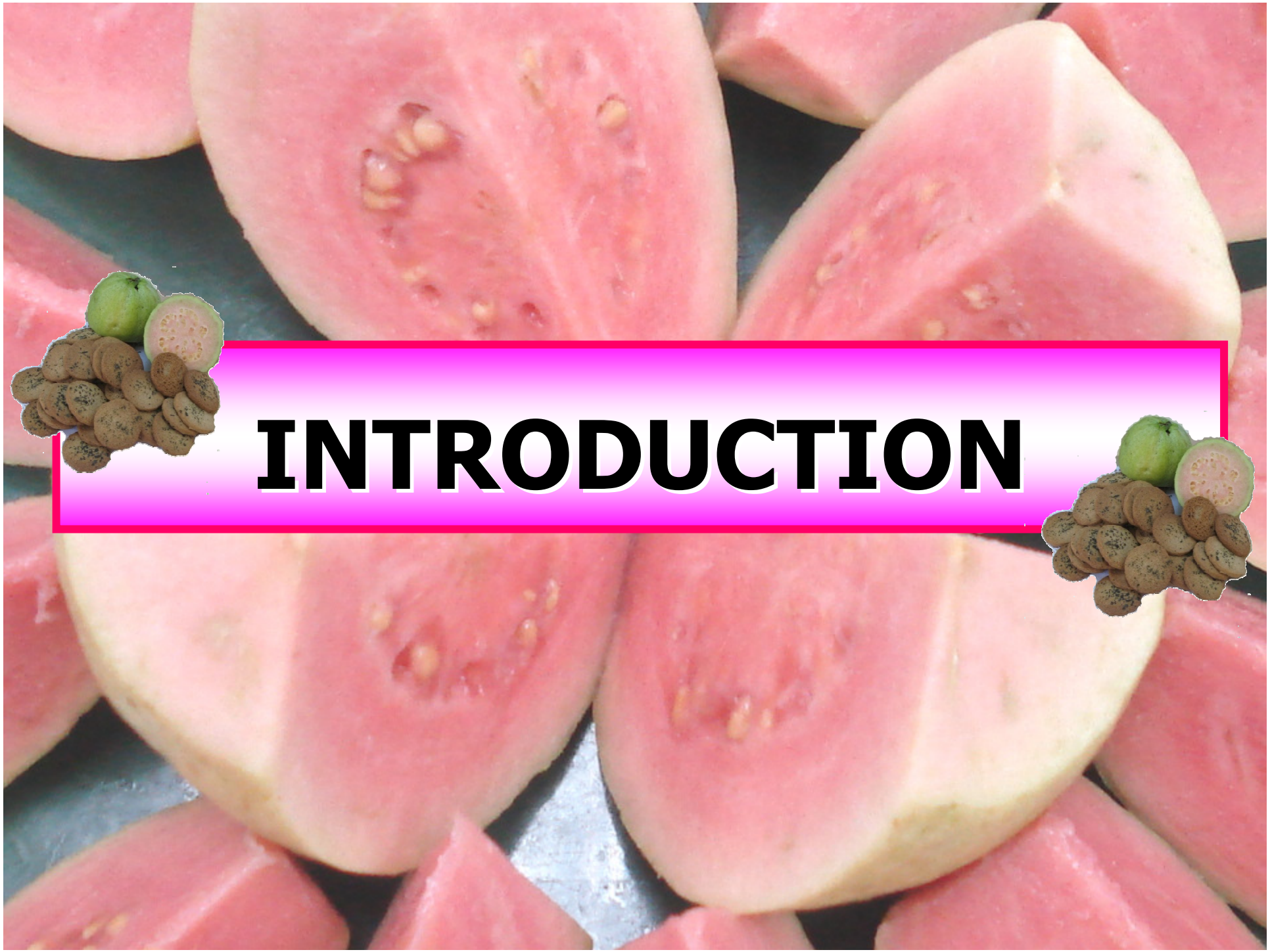
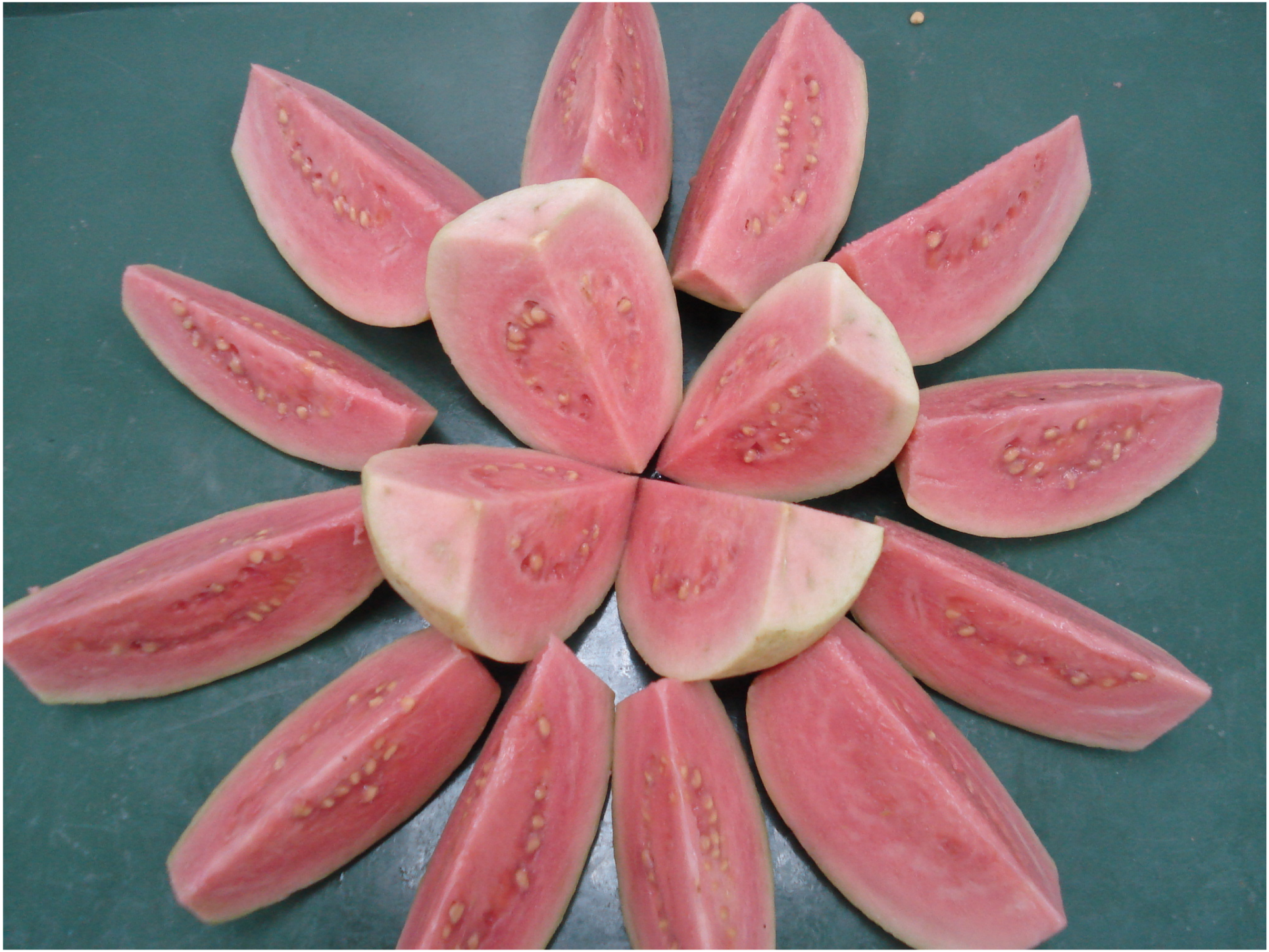

INTRODUCTION

Introduction

- Guava fruits are rich in vitamins A and C and contains high amount of dietary Fiber (Gorenstein *et al*., 1999; Jimenez-Escrig *et a*l., 2002 and Ramulu & Rao, 2002).
- In Malaysia, guava fruits are harvested in abundance, but short lived, rots and decays easily when ripe; resulting in wastage.

Golden Hope Food & Beverages Sdn. Bhd. Malaysia is the largest pink guava producer in Asia with over 500 hectares guava planted that produced 10,000 tons of fruits for pink guava juice for exports to Japan, USA, Australia, Philippines, Korea, Canada, Singapore and New Zealand. From the 10,000 tons of fruits, about 10% (100 tons) of the fruits are considered decanter waste (scrubs, and seeds).



NUTRITIONAL CONTENTS IN GUAVA FRUIT

Guava Fruits	per 100gm
Decanter waste	120mg ascorbic acid
Guava seeds	145 aromatic oil
Protein	15%
Fiber	36%
Starch	13%

The waste from guava juice processing could be used to produce value added products. This prompts us to consider the possibility of using different components of guava decanter waste in producing high fiber products such as cookies and flakes.

HEALTH BENEFITS OF GUAVA FRUIT

- High fiber content
- High vitamin content
- High lycopene content

Other health benefits:

It also can be employed for gastroenteritis, diarrhea and dysentery , wounds, ulcers and rheumatic places and also chewed to relieve toothache, remedy for coughs, throat and chest ailments, oral ulcers and inflamed gums, diarrhea, nephritis and cachexia.

NUTRITIONAL COMPOSITION OF GUAVA DECANTER WASTE

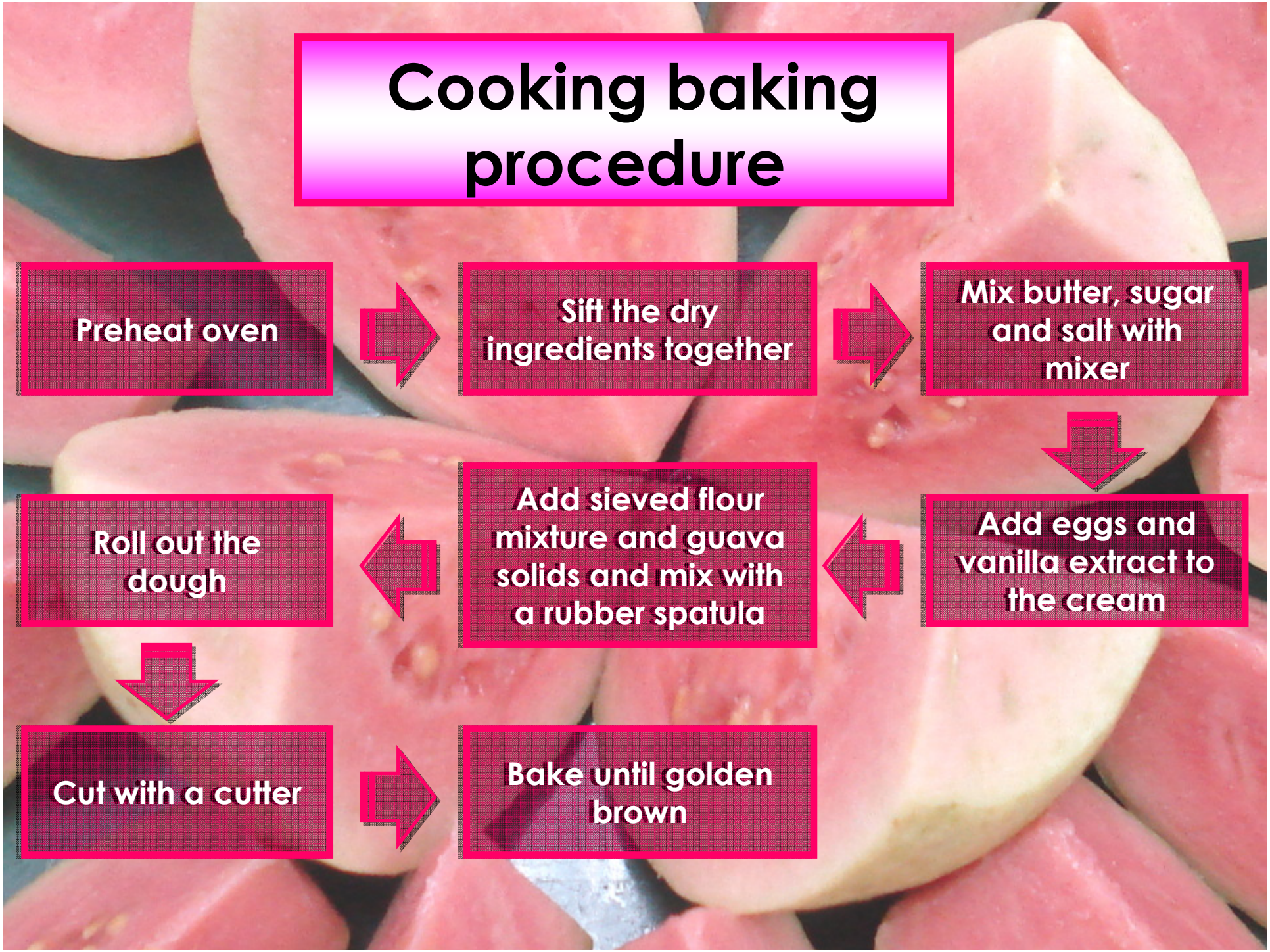
Nutrients	Per 100 g
Energy	512 kcal
Fiber	41.6 g
Fat	16.3 g
Protein	6.2 g
Cholesterol	0 mg

- The purpose of this work is to put into use agricultural waste for wealth and the same time preserving the natural environment.
- The objectives are:
  - To develop formulation.
  - To carry sensory evaluation.
  - To determine the chemical and physical characteristics of the cookies.

MATERIALS AND METHODS

COOKIES FORMULATION

- Percentage of decanter waste (scrubs and seeds at different ratios: 40 to 70%of total weight
- Basic cookie recipe
  - Flour
  - Fat
  - Sugar
  - Egg


Cooking baking procedure
Preheat oven
Sift the dry ingredients together
Mix butter, sugar and salt with mixer
Add eggs and vanilla extract to the cream
Add sieved flour mixture and guava solids and mix with a rubber spatula
Roll out the dough
Cut with a cutter
Bake until golden brown

Sensory Analysis during storage

- Sensory analysis were conducted at 0, 7, 14, and 30 days of storage

- The criteria were:
  - Crispiness
  - Colour
  - Crunchiness
  - Mouthfeel
  - Sweetness
  - Guava flavour

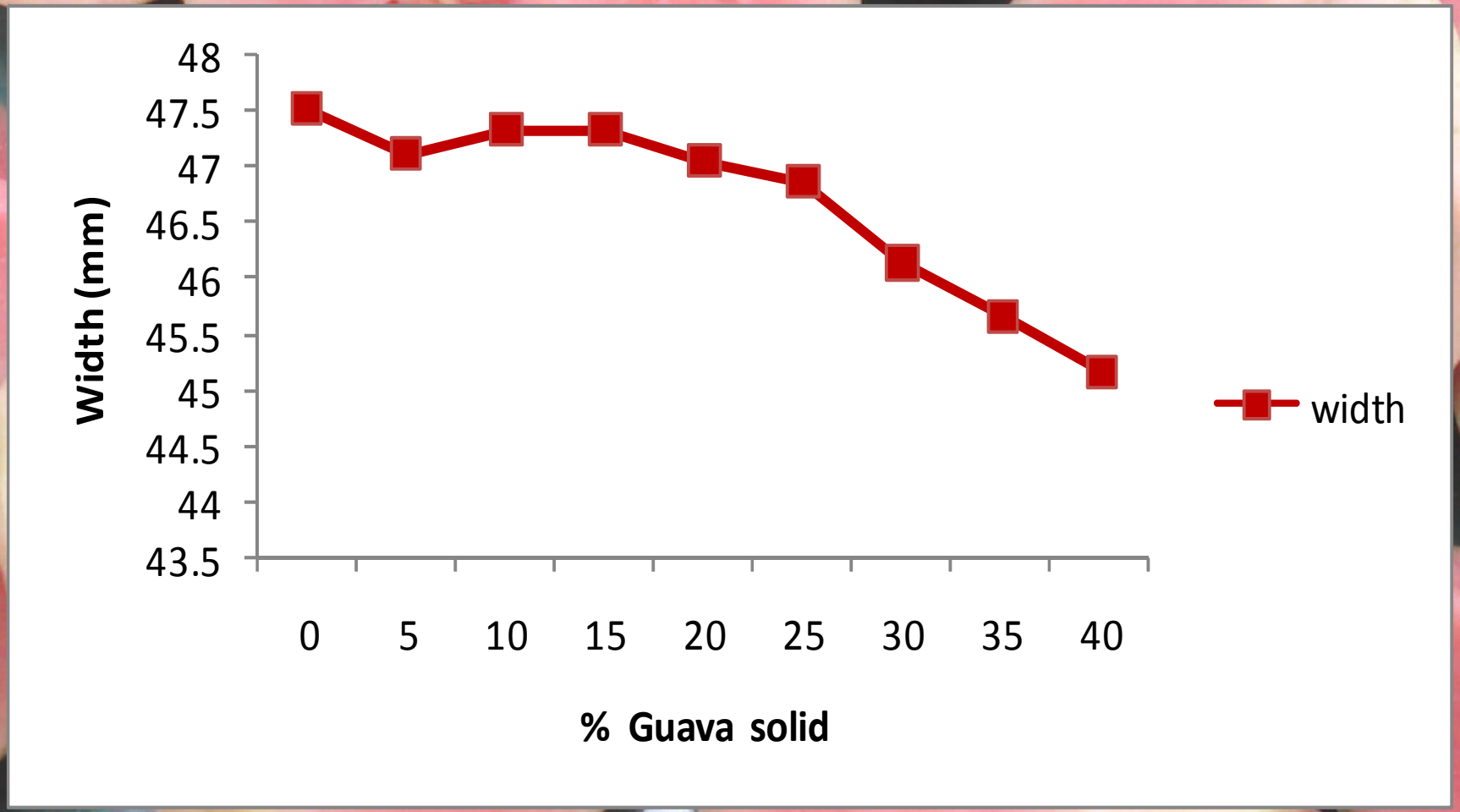
- The sensory panelists responses were rated based on a hedonic scale with rating of 1 to 9
- Test of significant difference was determined by Analysis of Variance (ANNOVA).

CHEMICAL ANALYSIS OF FORMULATED COOKIES

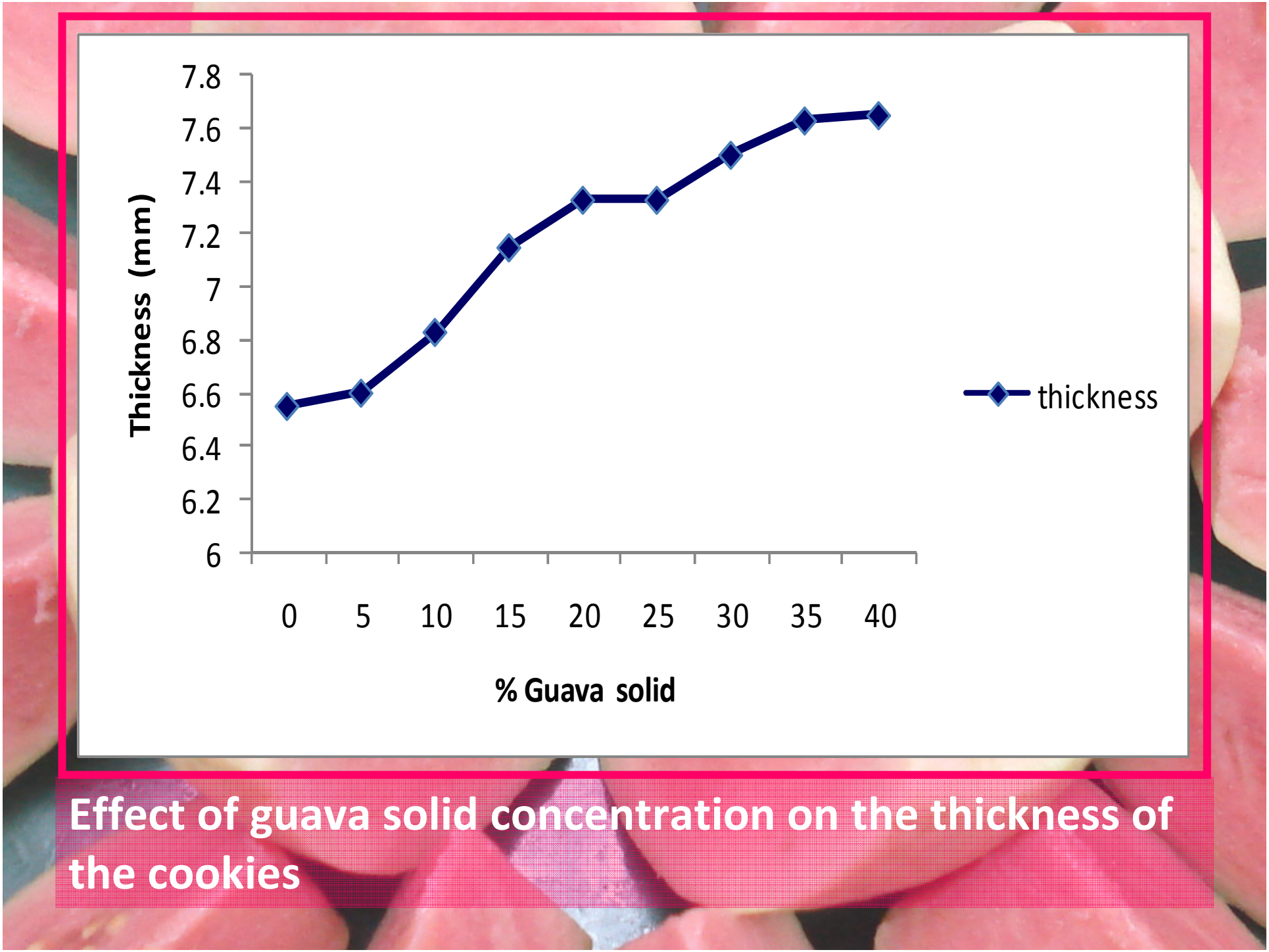
- Total crude protein %
- Total crude fat %
- Total crude fiber%

RESULTS AND DISCUSSION

PHYSICAL CHARACTERISTICS



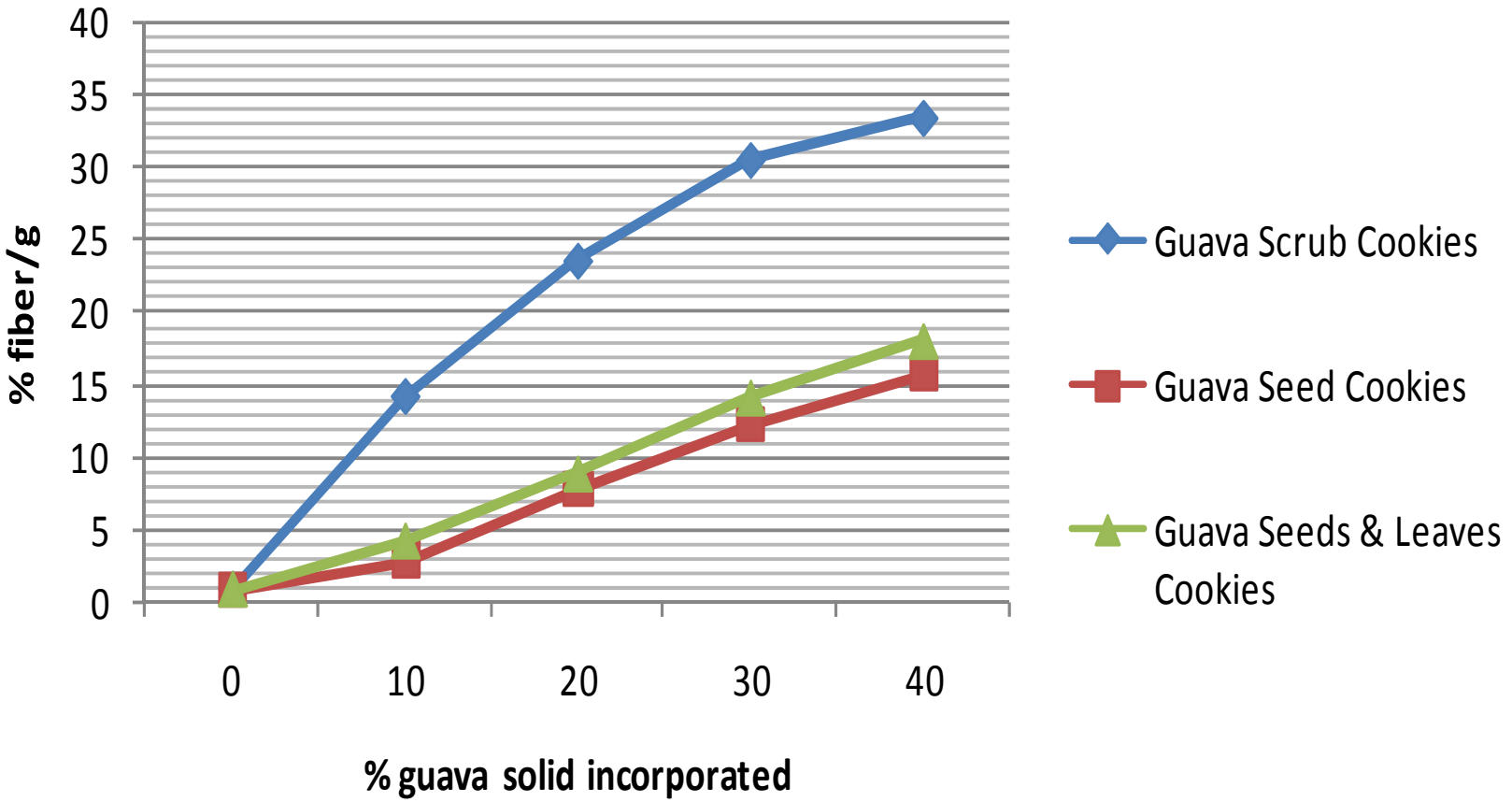
Effect of guava solid concentration on diameter of cookies



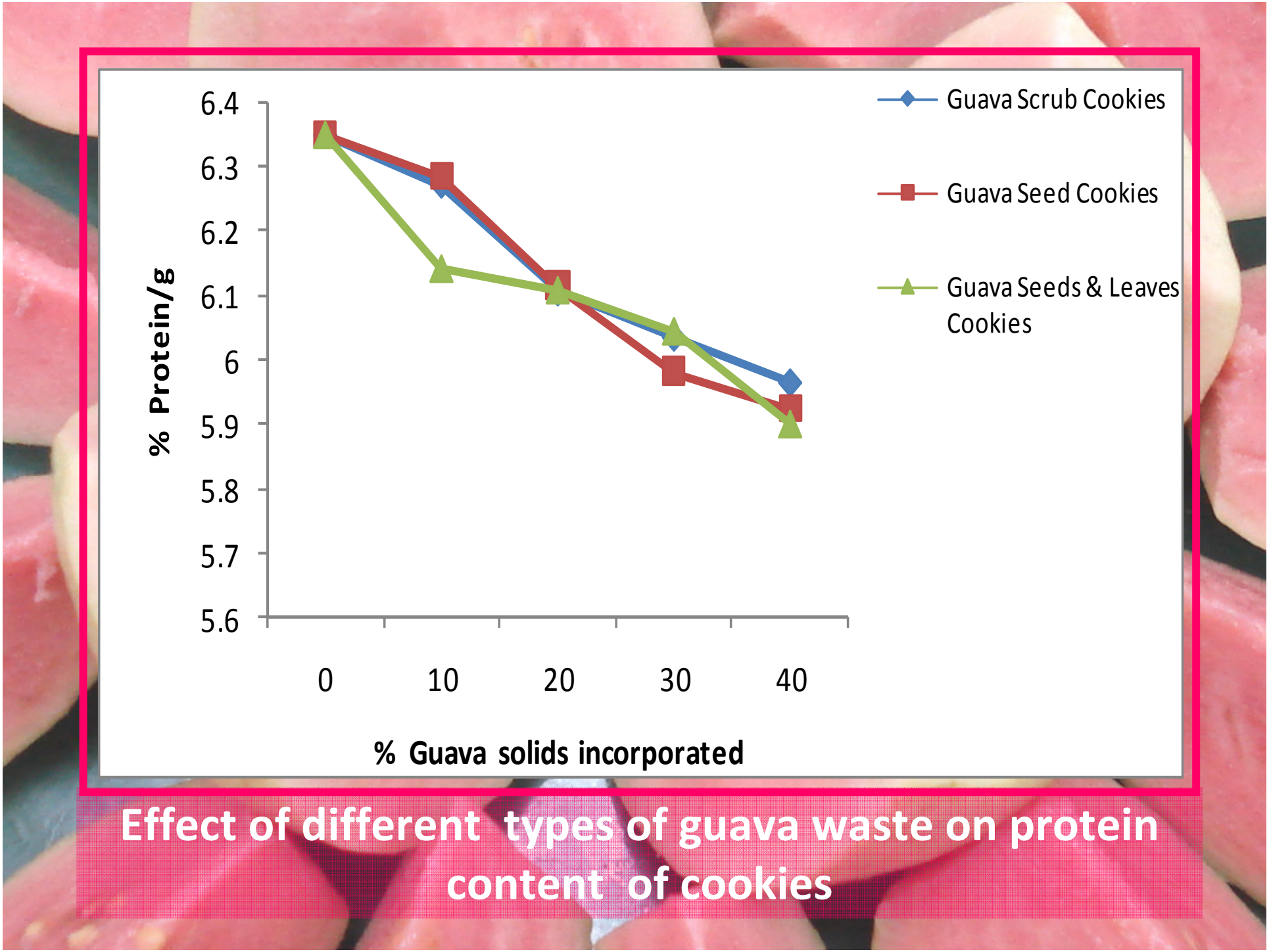
Effect of guava solid concentration on the thickness of the cookies

The spread ratio of cookies as affected by different concentration of guava solids

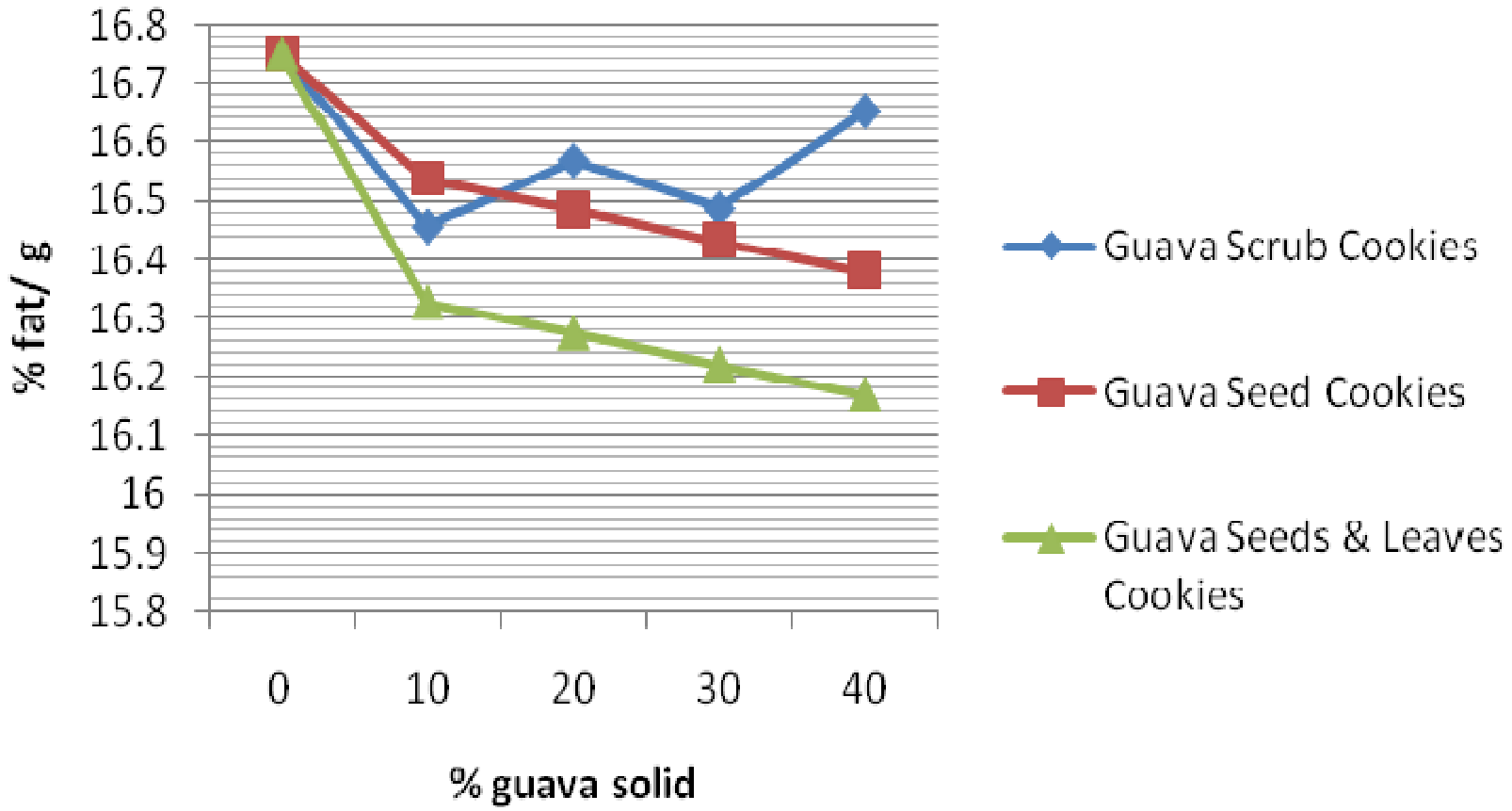
% Guava solid	Width (mm)	Thickness (mm)	Spread ratio (W/T)
0	47.52	6.55	7.25
5	47.12	6.6	7.14
10	47.33	6.83	6.93
15	47.33	7.15	6.62
20	47.05	7.33	6.42
25	46.87	7.33	6.39
30	46.14	7.5	6.15
35	45.67	7.63	5.99
40	45.17	7.65	5.9



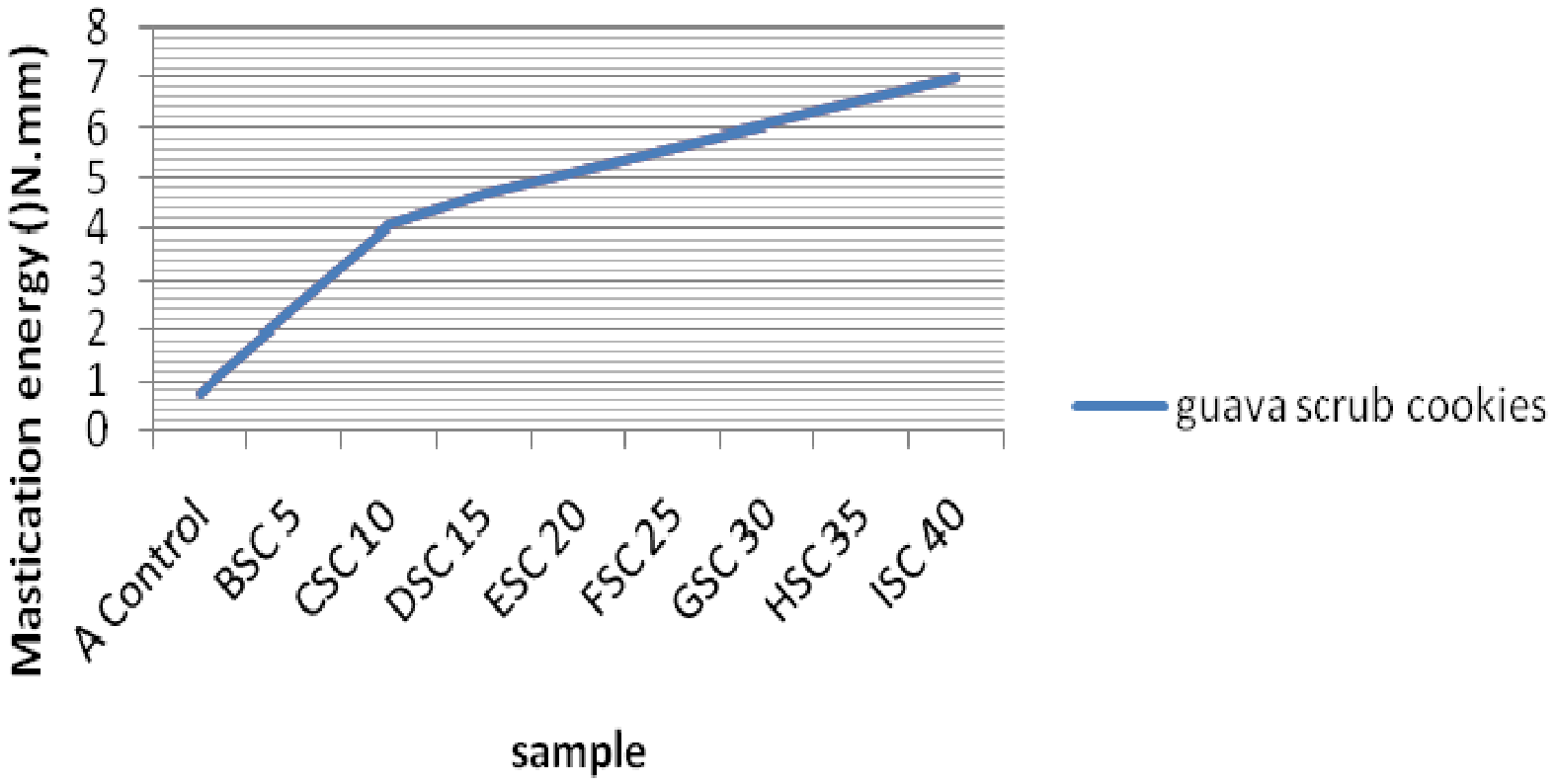
Effect of different types of guava waste on percentage of fiber in cookies



Effect of different types of guava waste on protein content of cookies



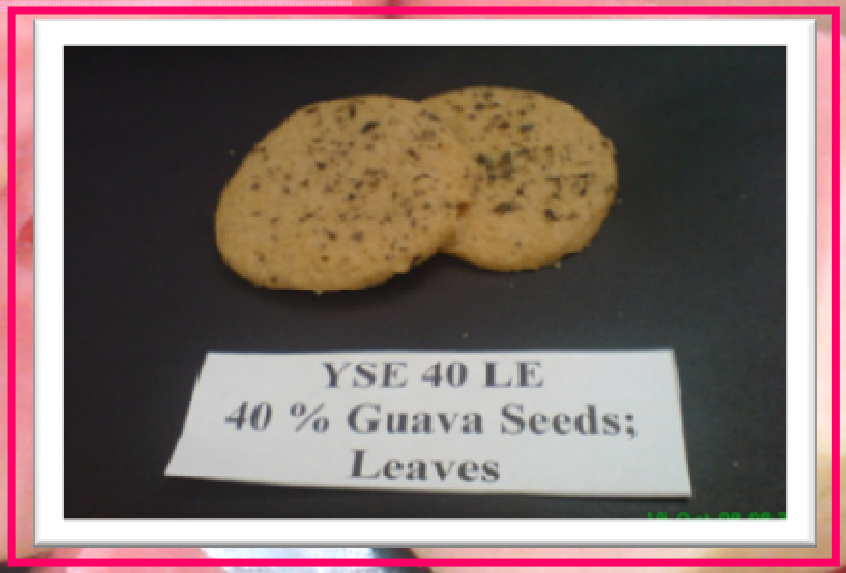
Effect of different types of guava waste on fat content of cookies



Texture analysis of guava scrub cookies

40 % guava scrub cookies variation

30 % guava scrub cookies

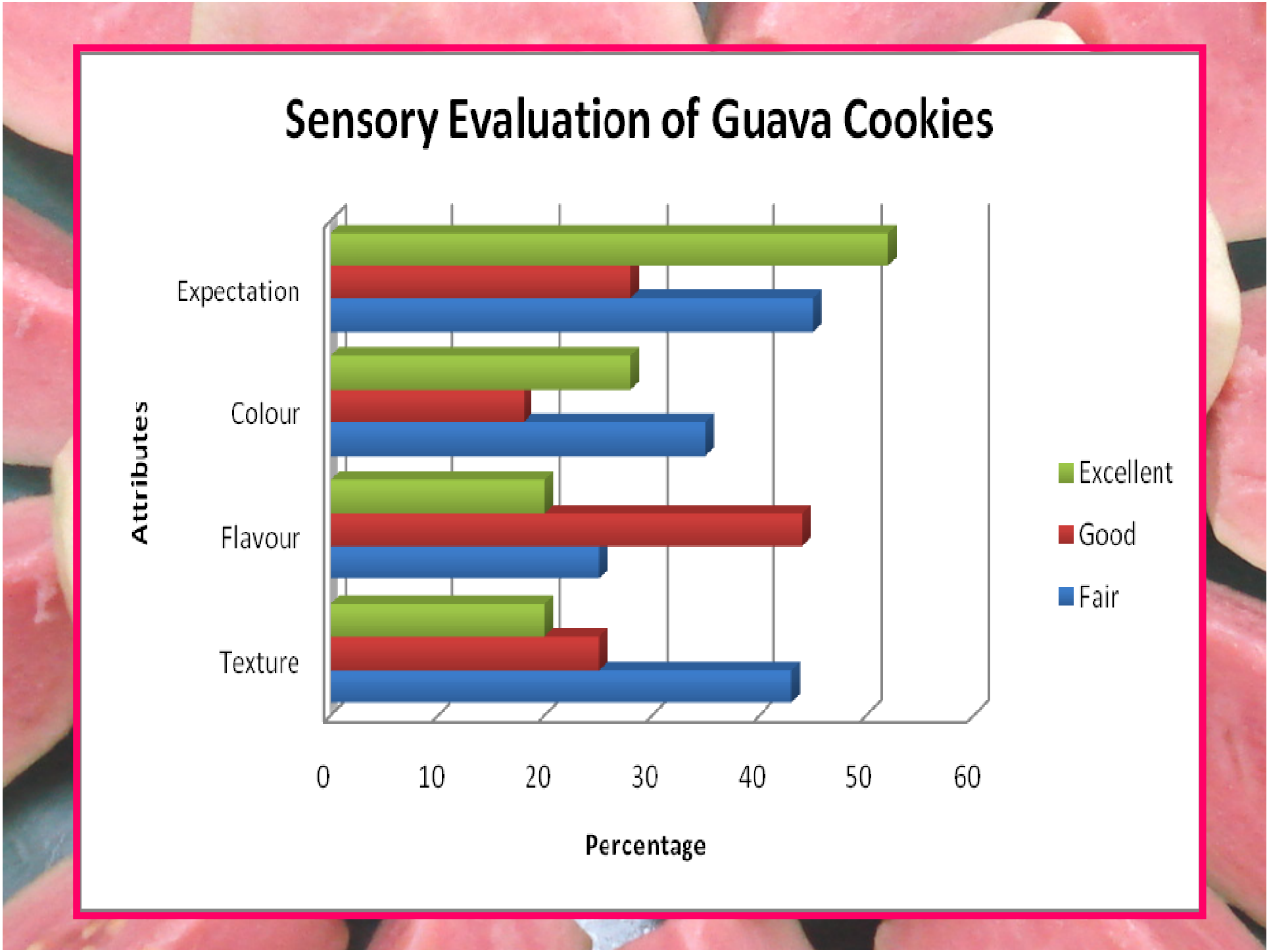


40% guava seeds and leaves cookies

40 % guava scrub cookies variation

30 % guava scrub cookies

40% guava seeds and leaves cookies


Sensory Evaluation of Guava Cookies
Attributes
Expectation
Colour
Flavour
Texture
0
10
20
30
40
50
60
Percentage
Excellent
Good
Fair

CONCLUSION

CONCLUSION

- Cookies with desirable characteristics were successfully produced by different combinations of pink guava wastes and other ingredients.
- Acceptable sensory scores (guava taste, appealing crust colour and appearance, crunchy mouth feel texture), and excellent storage quality were obtained.

- Agricultural wastes such as pink guava decanter waste (scrubs, and seeds) are utilizable for preparation of cookies.
- Other high value added products could be formulated with improved functional and nutraceutical properties.

Originality and Innovativeness

- Highly Nutritious
- High Fiber Content
- Irresistible Crunchiness
- Acceptable Mouthfeel
- Excellent Freshness
- Marvelous Guava Taste

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ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA


HI-5IVE
GUAVA HI-5IVE COOKIES
75 %
HI-5IVE
GUAVA HI-5IVE COOKIES
75 %
30 g

THANK YOU

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