BY-PRODUCTS OF PEANUT OIL MILL FOR THE PRODUCTION OF THAZIN BLOOMS AND VARIOUS FOOD*

Hnin Ei Hlaing[1]

Abstract

Nowadays, the prices of peanut oil and other food for human consumptions are increasing gradually. So, to fill the needs, a survey has been made to Tun Tauk Naing Co., Ltd., Ngwe Thazin Min Peanut Oil Mill situated at Industrial Zone (1), Hlaing Thar Yar Industrial Zone, Yangon Region by using questionnaires method. Questionnaires concerning with oil seed collection, storage and drying were made to the manager and the responsible staff. Peanut oil processing had observed and recorded by using the photographs. There are many by-products such as peanut hull, peanut skin and peanut cake are produced from peanut oil processing. In this research, the application of major by-product peanut cake can be used in many ways: such as biofertilizers for the germination of Thazin bulbs to bloom; as human consumption for crispy peanut cake, peanut cake jam and sour peanut cake; and also as animals feed for ruminant, fish and prawn. Further research can be carried out by using by-product of peanut cake in preparation of various confectionaries. In this way, various edible products production can be enhanced by using by-products from peanut oil mills. Finally, the transformation of by-products from peanut oil mill can be produced as bio-fertilizer for plants, as various confectionaries for human and also as food for ruminants and aquatic animals.

Keywords: by-product; peanut oil; Thazin; peanut cake.

Introduction

In 21st century, people are facing many waste issues in their surroundings. The waste issues also come out from agriculture products such as rice, wheat, corn, sesame seeds and peanut which are abundantly produced in Myanmar. One of the issues was found out during the survey of Ngwe Thazin Min Oil Mill, Tun Tauk Naing Co. Ltd. in Hlaing Thar Yar Township, Yangon Region. After interviewing, taking photograph and surveying of that oil mill, that research has been undertaken. The by-product of peanut oil is peanut hull; peanut skin and peanut cakes that are produced from peanut oil processing. Peanut hull and peanut skin can be used as burning fuel instead of charcoal and wood for cooking. Peanut cake can be used in biofertilizer as well as flourished for angiosperms and edible plants; many ways if human consumption such as fermented peanut cake, peanut flour, peanut butter, peanut cookies, peanut ice-cream, peanut waffle, etc., and animal feed. This research can be carried out by using by-product of peanut cake in preparation of various confectionaries. In this way, various edible products production can be enhanced by using by-product from peanut oil mill. All the literature survey was reviewed from the internet source and also shown in references.

Materials and methods

Facts concerning with the by-product of peanut oil (peanut cake) were collected from Tun Tauk Naing Co., Ltd., Ngwe Thazin Min Peanut Oil Mill. Questionnaires and interviewing to the manager and the responsible staff of Tun Tauk Naing Co., Ltd., Ngwe Thazin Min Oil Mill were made. Yes or No Question type with Recording and Surveying in the peanut oil mill by taking photographs had been undertaken.

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[1] Department of Botany, University of Yangon

Plantation of Thazin by using peanut cake biofertilizer

According to the interviewing survey, there are 85 poles of Thazin in the area of 30x70 square feet. A ready-made 7 feet long pole covered with coconut fibers from mesocarp and tied around with coconut ropes having 5 feet long has been selected for plantation of Thazin bulbs. Each pole has planted with 50 ticals to 75 ticals of Thazin bulbs. One viss of Thazin bulb price is 1 lakhs or 80,000 Myanmar kyats during these days. One spray of Thazin bloom cost 40,000 Myanmar kyats nowadays. After selling of Thazin sprays or blooming period of Thazin, new Thazin bulbs can be planted on a new pole. The peanut cakes are placed in the netted container and hang on the pole as a biofertilizer, after planting the bulbs on the pole. When the bulbs are sprayed with water or seasonal rain can wash down that peanut cakes biofertilizer onto the growing bulbs. In this way, the Thazin bulbs are growing very well. Finally, the elegant sprays of Thazin are blooming again in the next season.

Preparation of Three Types of Food from Peanut Cake

According to laboratory scale, three types of food from peanut cake were made; the paste of peanut cake was prepared from 0.5 L of water and 150 g peanut cake heated on the oven during 20 minutes. After that, three types of food from peanut cake were made by the following procedures: -

(1) Crispy peanut cake

Materials, Apparatus and Procedures

Sticky rice powder; peanut cake paste; salt; Shwe-leik-pyar frying powder**;** peanut oil; balance; stove. 50 g Sticky Rice Powder, 50 g of Peanut cake paste, one tea spoon of salt, one tea spoon of Shwe-leik-pyar frying powder were mixed properly. Then, made a ball and fried it with peanut oil on the stove at a temperature of 150ºC for 5 minutes. When the crispy peanut cakes are ready, pick up from the oil and cool on sieve rack and cool down. Now, it is ready to eat.

(2) Peanut cake jam

Materials, Apparatus and Procedures

Sugar; Peanut cake paste; balance; stove. 50 g of Sugar and 50 g of Peanut cake paste were mixed properly. Then, stirred it and heated on the stove at a temperature of 100ºC for 20 minutes. Cool down and use as peanut cake jam.

(3) Sour peanut cake salad

Materials, Apparatus and Procedures

Peanut cake; peanut oil; onions; chilies; salt and sugar**;** balance; refrigerator. 50 g of Peanut cake was soaked in 1 liter of water for two days or more to get the sour taste. When the peanut cake paste changed into sour taste, put it in the dried bottle or airtight container and kept in the refrigerator for long term use. Then, 25 g of sour peanut cake paste, five tea spoons of peanut oil, three sliced onions, five cut chilies, salt and sugar were mixed together and can get the salad of sour peanut cake.

Laboratory Analysis Report of moisture, protein and crude fat of peanut cake

The laboratory Analysis Report of moisture, protein and crude fat tests of peanut cake for year 2022 and 2023 from Myanmar Food Processors and Exporters Association (MFPEA) Food Industries Development Supporting Laboratory (FIDSL), UMFCCI was also recorded by taking photographs.

Results

After interviewing from Ngwe Thazin Min Peanut Oil Mill, taking the photographs of the processing of peanut oil mill (Fig. 1-10), the results of by-products of the peanut oil, biofertilizer for good Thazin plantation, by making the products in laboratory scale, three types of food from peanut cake were carried out and the tests of moisture, protein and fat were recorded**.**

Figure. 1. Different Advertisement and Logo of Ngwe Thazin Min Oil Mill

Figure. 2. Systematically Storing of peanut

Figure. 3. Storage for 3 months peanut

Figure. 4. Storage for 6 months peanut

Figure. 5. Measuring tools for moisture

Figure. 6. Testing tool for

Figure. 7. Machines used for the production of peanut oil

Figure. 8. Standard Packaging Room for Peanut Oil

Figure. 9. Different types of Peanut Oil Storing in the showcase for shelf life

Figure. 10. Packaging of Peanut Cake

By-products of the peanut oil

The by-products of peanut oil are peanut hull; peanut skin and peanut meal or peanut cakes are produced from peanut oil processing were recorded by photograph (Fig. 11).

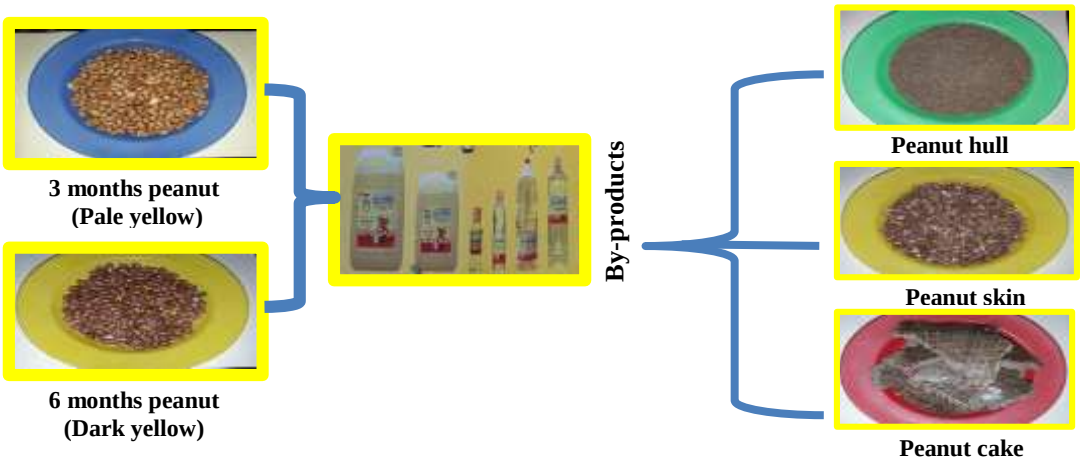


Figure. 11. Flow Diagram of the Peanut to by-products of the Peanut Oil

Biofertilizer for Thazin plantation

According to use interviewing and taking photomicrographs, peanut cake can be used as biofertilizer for good Thazin plantation (Fig. 12-16).

Figure. 12. Thazin bulbs for plantation

Figure. 13. Plantation of Thazin with the Peanut cake fertilizer

Figure. 14. New Thazin bulb with leaves

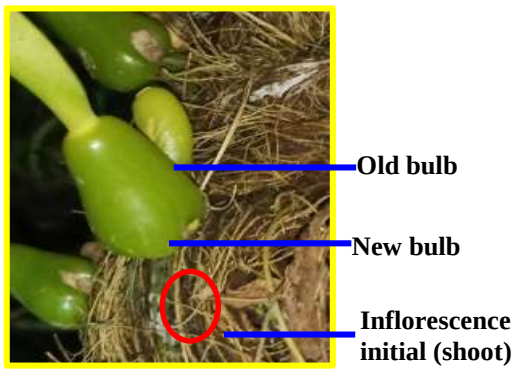


Figure. 15. New Thazin bulb with leave and shoot

Figure. 16. Transformation Stages of young Thazin spray to elegant Thazin spray is blooming on the bulb

Three Types of Food from Peanut Cake

The procedure was described in materials and methods. The photographs of three types of food from peanut meal or peanut cake were shown in (Fig. 20-23).

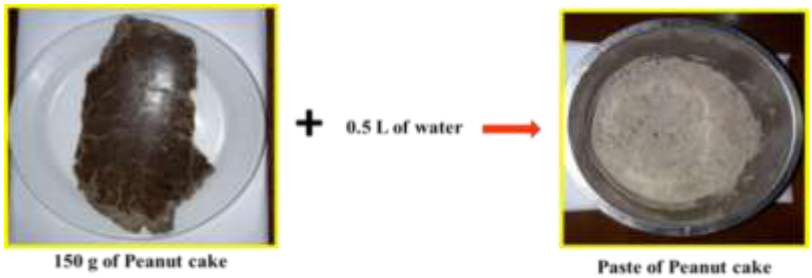


Figure. 20. Preparation of Peanut cake to paste of Peanut cake

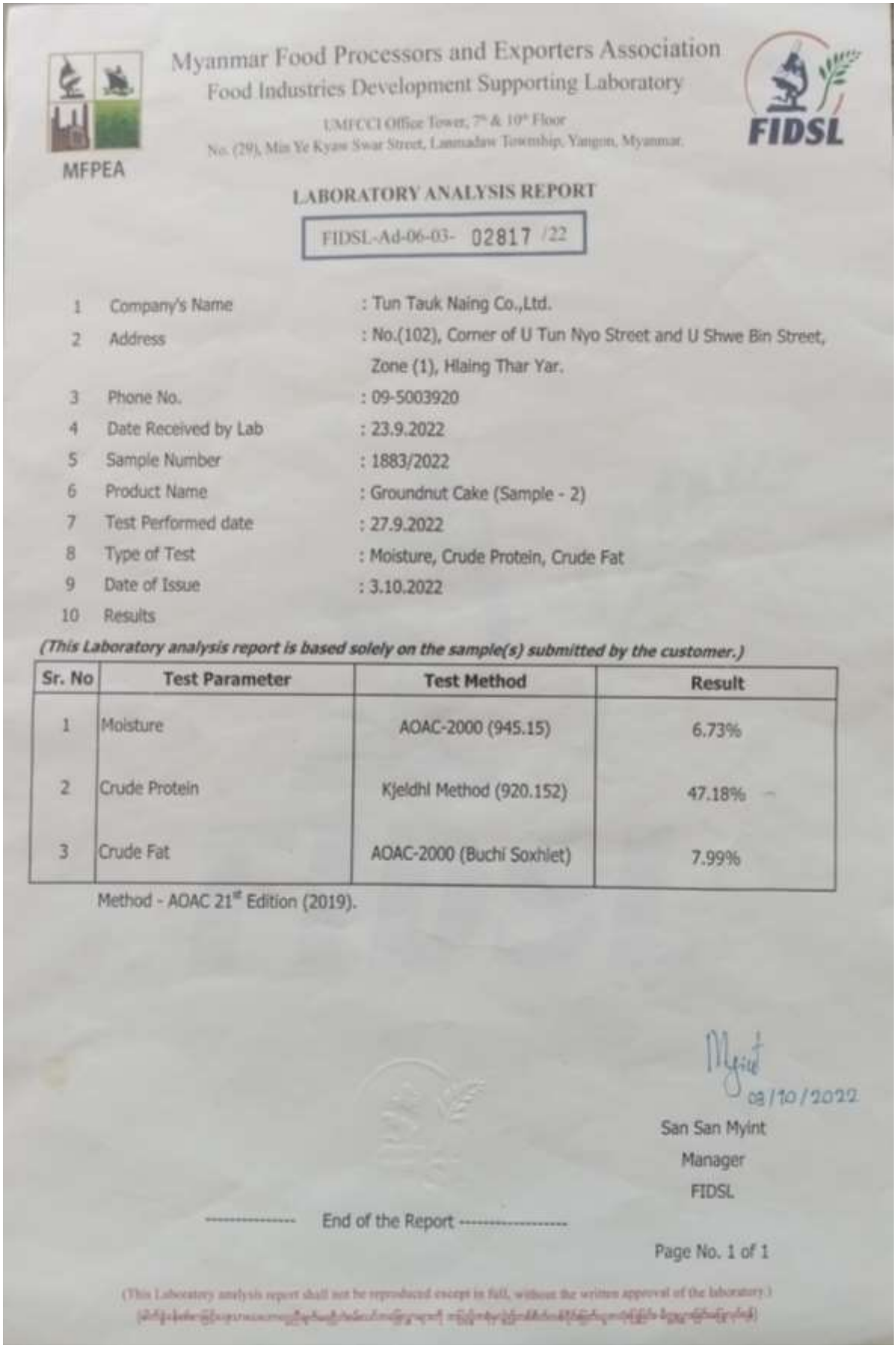
Figure. 21. Preparation of the paste of Peanut cake to Peanut cake Crispy

Figure. 22. Preparation of the paste of Peanut cake to Peanut cake Jam

Figure. 23. Preparation of the paste of Peanut cake to Salad of sour Peanut cake

Tests of Moisture, Protein and Fat

The results of moisture content, protein test and crude fat with ether extract were recorded and compared from 2022 to 2023. In the year 2022, the result of moisture content is 6.73% and 7.75% in May and 9.73% in September of the year 2023; the results of protein test are 47.18% in the year 2022 and 50.24% in May and 47.99% in September of the year 2023; the results of crude fat with ether extract are 7.99% in the year 2022 and 6.47% in May and 6.63% in September of the year 2023 (Fig. 17-19). The by-products from peanut oil mill, peanut cake had been used for animal feed such as ruminant, fish and prawns. As such, tests of moisture, protein and fat are vitally important to support the nutritional values of these animals.



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UMFCCI Office Tower, 7th & 10th Floor
No. (29), Min Ye Kyaw Swar Street, Lanmadaw Township, Yangon, Myanmar.

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LABORATORY ANALYSIS REPORT

FIDSL-Ad-06-03- 02817 /22

1	Company's Name	: Tun Tauk Naing Co.,Ltd.
2	Address	: No.(102), Corner of U Tun Nyo Street and U Shwe Bin Street, Zone (1), Hlaing Thar Yar.
3	Phone No.	: 09-5003920
4	Date Received by Lab	: 23.9.2022
5	Sample Number	: 1883/2022
6	Product Name	: Groundnut Cake (Sample - 2)
7	Test Performed date	: 27.9.2022
8	Type of Test	: Moisture, Crude Protein, Crude Fat
9	Date of Issue	: 3.10.2022
10	Results	

(This Laboratory analysis report is based solely on the sample(s) submitted by the customer.)

Sr. No	Test Parameter	Test Method	Result
1	Moisture	AOAC-2000 (945.15)	6.73%
2	Crude Protein	Kjeldhl Method (920.152)	47.18%
3	Crude Fat	AOAC-2000 (Buchi Soxhlet)	7.99%

Method - AOAC 21st Edition (2019).

03/10/2022

San San Myint
Manager
FIDSL

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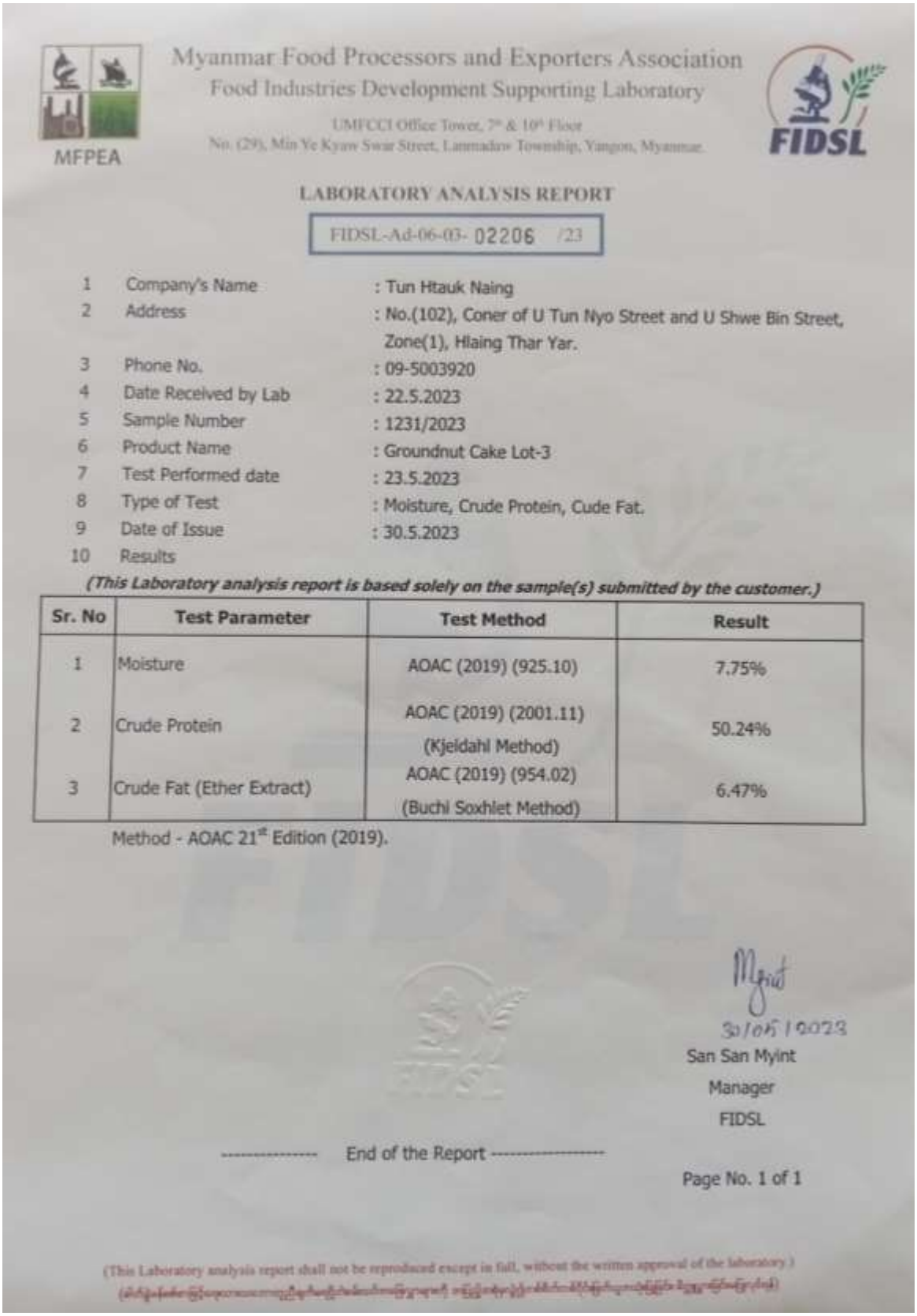
Figure. 17. Result of Protein test for 2022



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MFPEA

FIDSL

LABORATORY ANALYSIS REPORT

FIDSL-Ad-06-03- 02206 /23

1	Company's Name	: Tun Htauk Naing
2	Address	: No.(102), Coner of U Tun Nyo Street and U Shwe Bin Street, Zone(1), Hlaing Thar Yar.
3	Phone No.	: 09-5003920
4	Date Received by Lab	: 22.5.2023
5	Sample Number	: 1231/2023
6	Product Name	: Groundnut Cake Lot-3
7	Test Performed date	: 23.5.2023
8	Type of Test	: Moisture, Crude Protein, Cude Fat.
9	Date of Issue	: 30.5.2023
10	Results	

(This Laboratory analysis report is based solely on the sample(s) submitted by the customer.)

Sr. No	Test Parameter	Test Method	Result
1	Moisture	AOAC (2019) (925.10)	7.75%
2	Crude Protein	AOAC (2019) (2001.11) (Kjeldahl Method)	50.24%
3	Crude Fat (Ether Extract)	AOAC (2019) (954.02) (Buchi Soxhlet Method)	6.47%

Method - AOAC 21st Edition (2019).

30/05/2023
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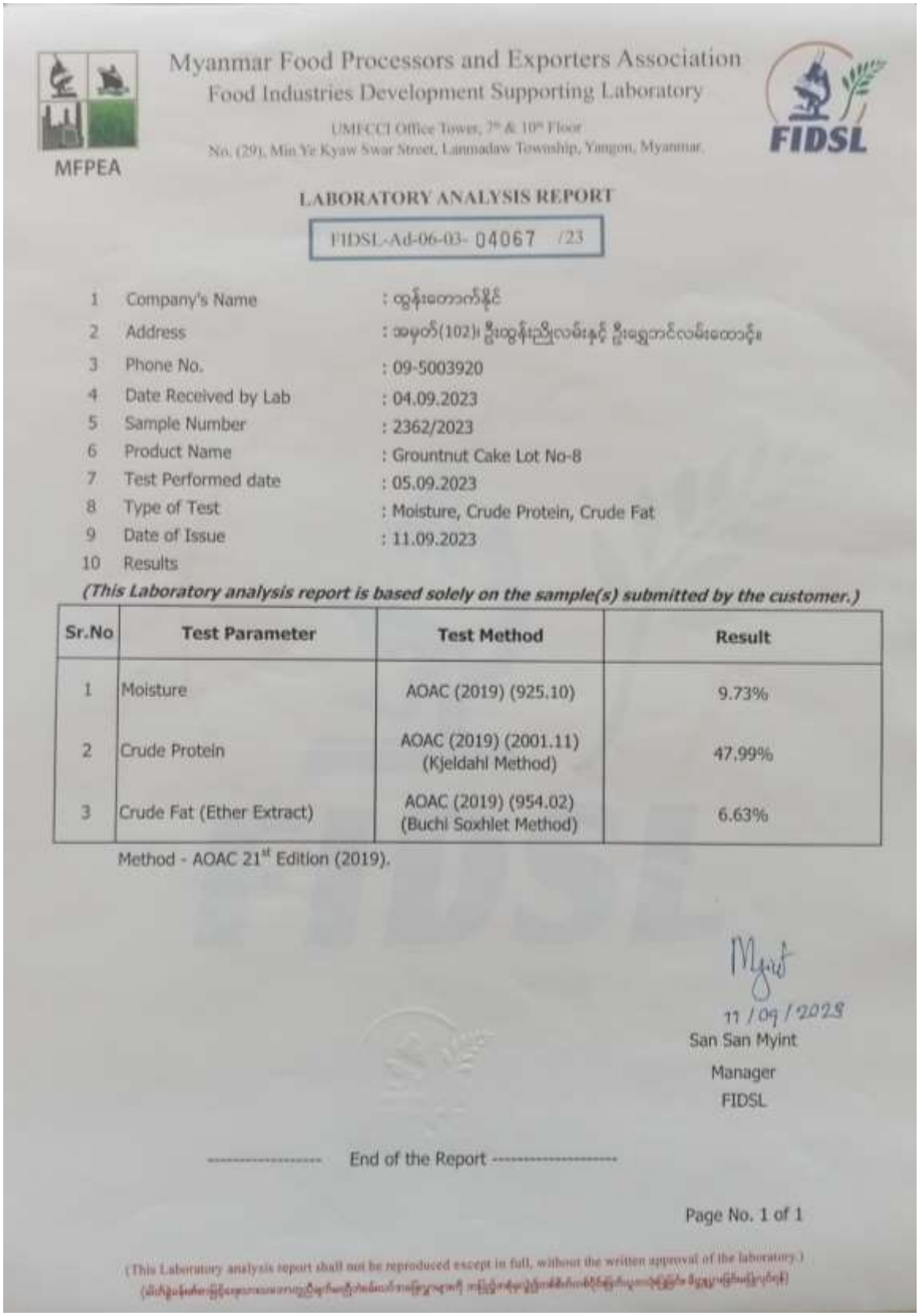
Figure. 18. Result of Protein test for May, 2023



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No. (29), Min Ye Kyaw Swar Street, Lanmadaw Township, Yangon, Myanmar.

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LABORATORY ANALYSIS REPORT

FIDSL-Ad-06-03- 04067 /23

1	Company's Name	: ထွန်းတောက်နိုင်
2	Address	: အမှတ်(102)၊ မြေထွန်းညီလေးနှင့် မြေရွှေဘင်လမ်းတောင်း
3	Phone No.	: 09-5003920
4	Date Received by Lab	: 04.09.2023
5	Sample Number	: 2362/2023
6	Product Name	: Grountnut Cake Lot No-8
7	Test Performed date	: 05.09.2023
8	Type of Test	: Moisture, Crude Protein, Crude Fat
9	Date of Issue	: 11.09.2023
10	Results	

(This Laboratory analysis report is based solely on the sample(s) submitted by the customer.)

Sr.No	Test Parameter	Test Method	Result
1	Moisture	AOAC (2019) (925.10)	9.73%
2	Crude Protein	AOAC (2019) (2001.11) (Kjeldahl Method)	47.99%
3	Crude Fat (Ether Extract)	AOAC (2019) (954.02) (Buchi Soxhlet Method)	6.63%

Method - AOAC 21st Edition (2019).

11 / 09 / 2023
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Figure. 19. Result of Protein test for September, 2023

Discussion and conclusion

This survey research has been done by interviewing with questionnaires, taking photographs and making the food in laboratory scale. Treatment with peanut cake biofertilizer for Thazin plantation, showed the positive results of the bulb, the new bud and the inflorescences. According to the Food Industry Development Laboratory analysis report of moisture, crude protein and crude fat with ether extract from Ngwe Thazin Min Peanut Oil Mill gave positive results which were matched with the standard results from internet sources. After critical thinking of the food and reviewing of the literature survey, three types of food namely crispy peanut cake, peanut cake jam and sour peanut cake salad were made by laboratory scale. Many types of healthy food from peanut cake can be made for human consumption. As the different kinds of human and animal needs can be produced by the by-products of peanut oil, it can reduce the price of peanut oil. After reducing the price of peanut oil, people can be used peanut oil cheaply for their healthy life style. Further research can be carried out by the transformation of by-products from peanut oil mill can be produced as biofertilizer for plant, as various confectionaries for human and as animal feed for cow and aquatic animals like fish, crabs and prawns.

Future plan of research

According to the above research, the future research plan will be carried out to make the peanut cake powder or liquid biofertilizer for plantation; it will upgrade the peanut cake powder or liquid biofertilizer for export; it will produce snacks from by-product of peanut cake; it will find out more various food from by-products of peanut oil for human consumptions and it will also transform the peanut cake powder for animals' feed.

Acknowledgements

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