ABDIMAS: Jurnal Pengabdian Masyarakat Universitas Merdeka Malang
Vol.9(4) November 2024, 868-875
p-ISSN: 2721-138X e-ISSN: 2548-7159
http://jurnal.unmer.ac.id/index.php/jpkm

LPPM
UNMER
MALANG

Furikake processing training to enhance product quality with innovative technology

I Gusti Ayu Wita Kusumawati[1], Ida Bagus Agung Yogeswara[1], Putu Wida Gunawan[2], Ni Wayan Nursini[1]

[1]Department of Nutritional Sciences, Faculty of Health and Science, [2]Department of Informatics Engineering and Faculty of Information Technology, Universitas Dhyana Pura
Jl. Raya Padang Luwih Tegaljaya, Dalung Kuta Utara, Bali, 80361, Indonesia

ARTICLE INFO:

Received: 2024-08-15
Revised: 2024-09-11
Accepted: 2024-10-18
Published: 2024-11-30

Keywords:

Furikake, Processing, Packaging, Sea lettuce

ABSTRACT

Sathya Sai Primary School provides a variety of extracurricular activities that students can choose from. The Scientific Work Group is one of the extracurricular activities at SD Sathya Sai. SD Satya Sai's Scientific Work Group innovated furikake made from sea lettuce. They won a gold medal in a national event through this processed innovation. The furikake produced by the partners has a slightly bitter taste and durability of only 2 weeks. The purpose of this PKM (community service) activity is to process furikake that is not bitter and has a long product durability. The method used in this activity is training and mentoring. This PKM activity resulted in an increase in partners' understanding of how to process furikake and use appropriate technology tools provided by the PKM team and an increase in furikake durability. In addition, this activity also increased the number of processed innovative products made from sea lettuce. With this PKM activity, it is hoped that the SD Sathya Sai Scientific Work Group can produce other innovative products made from sea lettuce using appropriate technology tools that have been provided by the PKM team.

How to cite: Kusumawati, I. G. A. W., Yogeswara, I. B. A., Gunawan, P. W., & Nursini, N. W. (2024). Furikake processing training to enhance product quality with innovative technology. Abdimas: *Jurnal Pengabdian Masyarakat Universitas Merdeka Malang,* 9(4), 868-875. https://doi.org/10.26905/abdimas.v9i4.13898

1. INTRODUCTION

The Indonesian government continues to improve the quality of education by improving the ability of teachers and students towards the golden generation of 2045 which is noble, moral, ethical, cultured, and civilised based on the philosophy of Pancasila (Darman, 2017). Primary schools play an important role in helping students' character building (Nugroho, 2020). In elementary school-age children, they have curiosity about something new. Primary schools can develop students' abilities through education taught by teachers. To be able to support character building and curiosity, as well as channel students' interests, schools hold extracurricular activities that students can choose according to their interests (Bakri et al., 2021).

SD Sathya Sai Denpasar, which was established in 2007, is one of the elementary schools that forms the nation's generation of character. This elementary school has a unique character learning that is based on human values which include truth, virtue, compassion, peace, and non-violence (Jaya & Sudarsana,

✉ Corresponding Author: **Ida Bagus Agung Yogeswara:** Tel. +62 361-426450 | E-mail: agungyogeswara@undhirabali.ac.id

2024). SD Sathya Sai has many achievements obtained by teachers and students through competitions at the sub-district level to the national level. Achievements obtained by students are obtained through the development of talents that are honed through extracurricular activities. SD Sathya Sai Denpasar has several extracurricular activities, such as music, silat, dance, computer, gateball, little doctor, and scientific work. The extracurricular scientific work contributed a gold medal to the national competition by innovating furikake made from sea lettuce.

Sea lettuce (Ulva lactuca) is a type of green algae that is abundant in coastal and marine areas. Sea lettuce has properties as an antioxidant, antibacterial, antifungal, and antitumour (Arbi et al., 2016), anticancer, antihyperglycemic, anti-inflammatory (Putri et al., 2020). Sea lettuce has high fibre content, vitamins A, B1, B2, B12, C, E, K, iodine, calcium, magnesium, sodium, copper, zinc, and iron (Panjaitan et al., 2021). Sea lettuce has not been widely utilised and is generally eaten in its fresh form as a salad ingredient, so the idea of the scientific student group to innovate sea lettuce into furikake is a new breakthrough. The furikake they made was tested on the school community. Based on interviews conducted by the community service team with the school, they wanted the product to last long and be accepted by the community. Because the furikake they produce has a slightly bitter taste, so it is less liked by children and also the shelf life only lasts about 2 weeks. This is an obstacle faced so that the furikake produced can be liked and can last a long time.

Based on the problems experienced by the scientific work group of SD Sathya Sai Denpasar, the community service team provides solutions to the problems faced in the form of furikake processing that is not bitter and produces furikake that can last a long time. Therefore, the purpose of this community service is to produce furikake products that are liked and have long durability.

2. METHODS

The method of implementing PKM (community service) activities uses training and mentoring methods. The training method is carried out by applying the technology of using a food dehydrator, food grinder, and packaging using a handsealer to produce furikake that has a longer shelf life. While the mentoring method is carried out to evaluate the sustainability of activities carried out by the scientific work group of SD Sathya Sai Denpasar, as a partner in PKM activities.

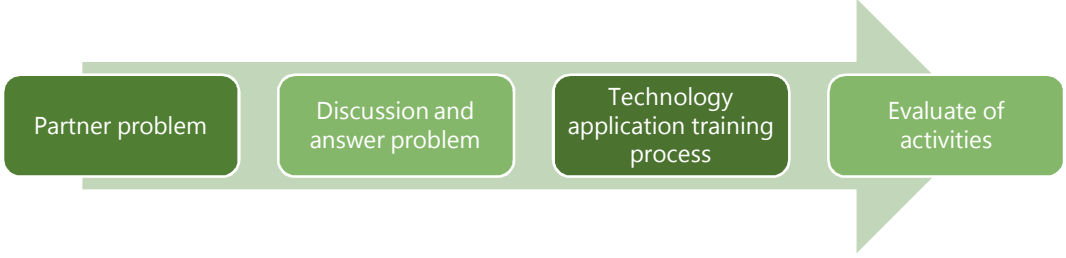

Figure 1. Scheme of mentoring activities

The PKM team are Dhyana Pura University lecturers from the nutrition science and informatics engineering study programmes. The team has expertise in food processing and packaging design. PKM activities are carried out from June 2024 to August 2024. The scheme of PKM mentoring activities is shown in Figure 1. PKM is carried out in several stages, namely PKM team coordination meetings, socialisation, lectures, training, monitoring, and evaluation described in Figure 2. Partners are given pre-test and postest questions to measure the level of knowledge and success of the program absorbed

by partners. Evaluation of programme implementation is carried out at the end of each activity, while monitoring is carried out once a month to monitor the sustainability of the PKM programme. Monitoring is carried out by discussing the obstacles and problems faced by partners in using technology when making furikake.

3. RESULTS AND DISCUSSION

Training activities for making furikake products that are in demand and have a longer shelf life are one of the community service programmes carried out at SD Sathya Sai Denpasar. To realise the achievement of furikake products that are in demand and have longer durability, the PKM team provides technological assistance in the form of tools that can support the success of the programme such as food dehydrator, food grinder, scales, and handsealer. The use of airfryer is an innovation in frying without using cooking oil (Sukadi et al., 2020), so that the products produced can last longer and be healthier. The repeated use of cooking oil is very troubling to the public because it can accelerate product damage and cause various diseases (Ariani et al., 2017), therefore the use of cooking oil for frying food needs to be limited to maintain the nutritional value and durability of the product.

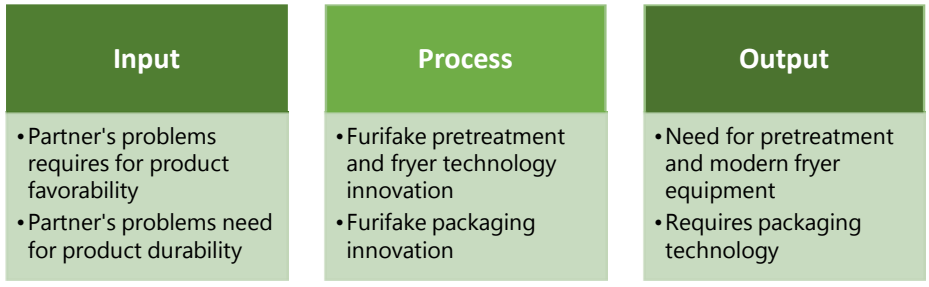

Figure 2. Community service stages

Socialisation of PKM Activities

PKM activities began with socialisation conducted by the PKM team together with the principal of SD Sathya Sai Denpasar, as shown in Figure 3. The PKM team explained the work program that would be applied to partners, the equipment assistance that would be provided, and the activity implementation plan.

Lecture

Prior to the training and mentoring activities, partners were given a lecture on sea lettuce, the nutritional content of sea lettuce, the benefits of consuming sea lettuce, and the utilisation of sea lettuce. At this stage, partners were asked to fill out a pre-test to measure their level of understanding of sea lettuce before the lecture, as shown in Figure 4. After the lecture, a discussion session was held. Partners enthusiastically participated in the activity by asking many questions in the discussion session.

Furikake Making Training

Furikake is made by drying sea lettuce using a food dehydrator. Furikake pretreatment was conducted by washing the sea lettuce under running water (Figure 5). Next, the sea lettuce, sesame seeds and peanuts were dried in a food dehydrator at 70°C for 24 hours, as shown in Figure 6. The mixture was then ground using a food grinder, as shown in Figure 7. The sea lettuce was then mixed with garlic powder and mushroom stock to give it a savoury taste.

Figure 3. Socialisation of the PKM team with the principal of Sathya Sai Elementary School Denpasar
Figure 4. Partners take the pre-test

Figure 5. Blancing of sea lettuce
Figure 6. Drying ingredients using a food dehydrator
Figure 7. Grinding the ingredients using a food grinder

The PKM team facilitated a food dehydrator, scales, and food grinder to support furikake making activities, as shown in Figure 8. Furikake produced from the use of a food dehydrator becomes dry and

durable, while the use of a food grinder makes it easier to mash furikake because furikake has a fibrous texture that is difficult to mash using a blender. The use of food dehyrator is more effective and efficient in drying the product because it uses a controlled temperature and can dry faster when compared to the use of sunlight (Abryandoko et al., 2024). In addition, drying using a food dehydrator can reduce the water content contained in the product so that the durability of the product increases (Gunawan et al., 2022). Previous partners processed sea lettuce by steaming, this caused the colour of sea lettuce to fade and the onset of bitterness. By pretreatment with the blanching method for 15 minutes, the colour of sea lettuce can be maintained and remove the bitter taste, because it inactivates the enzymes that play a role in discolouration (Medho & Muhamad, 2024). In addition, the use of garlic and mushroom broth can also improve the savoury taste (Moulia et al., 2018) of furikake.

Figure 8. PKM team handing over appropriate technology assistance

Furikake Packaging Training

Furikake that has been processed needs to be packaged to maintain product durability. The type of packaging used can affect the durability of the product (Kusumawati et al., 2020). Furikake made by partners before the PKM activity was packaged using transparent plastic equipped with adhesive, as shown in Figure 9.

Figure 9. Furikake packaging before the PKM activity

Partners were trained on the selection and use of packaging materials. The packaging used to package furikake is made from aluminium foil standing pouches and is equipped with attractive packaging labels, as shown in Figure 10. Aluminium foil standing pouch packaging not only creates an elegant impression but is able to protect the product well by protecting the product from air, odour, and light as well as microorganisms so that the durability of the product is increased (Widyamurti, 2018).

Figure 10. Packaging training

In this activity, the PKM team facilitated aluminium foil standing pouch packaging and a handsealer used to glue the packaging, as shown in Figure 7. Furikake packaged with plastic standing pouches can last for 2 weeks, while using aluminium foil standing pouch packaging can last for 2 months. Thus, the use of aluminium foil-based standing pouch packaging can help increase the durability of furikake.

Monitoring

At the end of the activity, partners were given postest questions to determine the level of understanding and success of partners in implementing the programme provided by the PKM team. Figure 11 shows the results of the pre-test and postest. From the results of the pre-test and postest, it shows an increase in partner understanding of the training programme provided by the PKM team.

At the monitoring stage, partners are measured for their knowledge in applying the appropriate technology provided by the PKM team. Monitoring and evaluation activities are carried out at the end of each activity. The results of pretreatment of sea lettuce with the blanching method produced a brighter colour in furikake and a less bitter taste. The furikake produced has a distinctive aroma like seaweed. The furikake products produced after the training also had a longer shelf life. Monitoring is still conducted once a month to determine the level of sustainability of the programme by the partners.

Evaluation

The evaluation stage is carried out for the obstacles experienced by partners in carrying out furikake processing using the tools provided by the PKM team. At this stage, the partners and the PKM team discussed with each other to overcome the obstacles experienced. Based on the results of the discussion, there is a slight obstacle for partners when using a food grinder because when they want to

stop the operation of the tool the plug must be unplugged from the socket, so if they want to smooth it, they have to plug it back in. This is considered less practical. In addition, the partners experienced problems in the processing area. Partners do not have a kitchen to process sea lettuce. Training and mentoring activities can run smoothly because they receive support from the principal and school community so that all obstacles experienced during the activity can be overcome. The school provided a school hall to be used as a place to conduct training and mentoring activities for processing sea lettuce. Partners always attended every activity and enthusiastically participated in the activities. Partners also expressed their gratitude for the training and mentoring conducted by the PKM team.

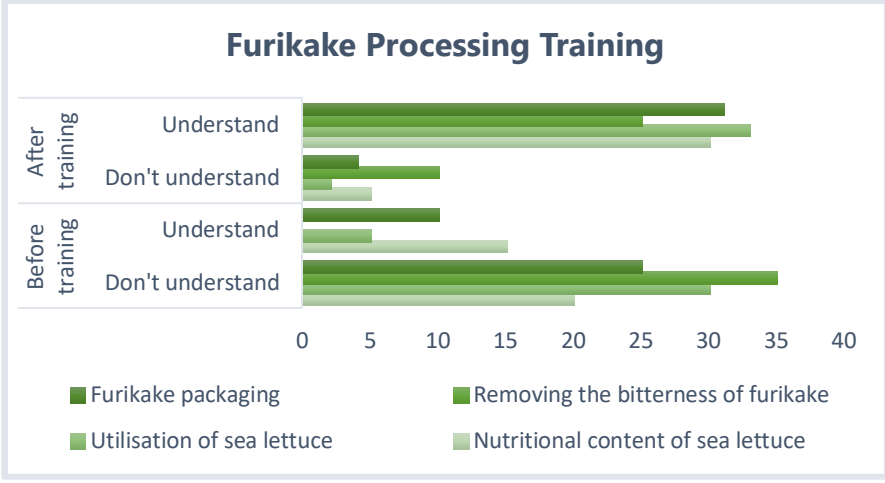

Figure 11. Pre-test and post-test results

4. CONCLUSION AND RECOMMENDATIONS

The aim of the PKM activity of the scientific work group of SD Sathya Sai, Denpasar is to produce furikake that has a long durability and is favoured by the community. The main target of this PKM activity is that partners can process and use the appropriate technology provided by the PKM team. The results achieved through this PKM activity are the increased understanding of partners about processing furikake that is not bitter and has a long product durability. As for the furikake products produced, they are not bitter, have long product durability, and are packaged with appropriate packaging and equipped with attractive designs.

Recommendations for the sustainability of the programme are that the PKM team needs to provide assistance and monitoring to ensure that partners master the use of appropriate technology tools provided. Service activities can be continued by providing marketing training so that the products produced can be sold to the community.

ACKNOWLEDGEMENTS

Directorate of Research, Technology and Community Service of the Ministry of Education, Culture, Research and Technology in accordance with the 2024 fiscal year contract number 130/E5/PG.02.00/ PM.BARU/2024.

REFERENCES

Abryandoko, E. W., Ashari, F., Febriansa, N. D., & Fachreza, A. A. (2024). Microcontroller based food dehydrator for Rengginang crackers micro businesses in Prambontergayang Village, Tuban District. *Abdimas: Jurnal Pengabdian Masyarakat Universitas Merdeka Malang*, *9*(1), 12-21. https://doi.org/10.26905/abdimas.v9i1.12142

Arbi, B., Ma'ruf W. F., & Romadhon, R. (2016). Aktivitas senyawa bioaktif selada laut (Ulva lactuca) sebagai antioksidan pada minyak ikan (The activity of bioactive compounds from sea lettuce (Ulva lactuca) as antioxidant in fish oil). *Saintek Perikanan: Indonesian Journal of Fisheries Science and Technology (IJFST)*, *12*(1), 12–18. https://doi.org/10.14710/ijfst.12.1.12-18

Ariani, D., Yanti, S., & Saputri, D. S. (2017). Studi kualitatif dan kuantitatif minyak goreng yang digunakan oleh penjual gorengan di Kota Sumbawa. *Jurnal Tambora*, *2*(3), 1-8. https://doi.org/10.36761/jt.v2i3.173

Bakri, A. R., Sutrisno, S., & Mushafanah, Q. (2021). Nilai karakter siswa pada kegiatan ekstrakurikuler. *Indonesian Values and Character Education Journal*, *4*(1), 1-6.

Darman, R. A. (2017). Mempersiapkan Generasi Emas Indonesia tahun 2045 melalui pendidikan berkualitas. *Jurnal Edik Informatika Penelitian Bidang Komputer Sains dan Pendidikan Informatika*, *3*(2), 73-87. https://doi.org/10.22202/ei.2017.v3i2.1320

Gunawan, P. W., Kusumawati, I. G. A. W., Nursini, N. W., & Yogeswara, I. B. A. (2022). Penerapan teknologi pengeringan ubi ungu dan pemasaran berbasis digital. *CARADDE: Jurnal Pengabdian Kepada Masyarakat*, *5*(1), 48-55. https://doi.org/10.31960/caradde.v5i1.1348

Jaya, M. P., & Sudarsana, I. K. (2024). Pendidikan karakter berbasis budaya spiritual di SD Sathya Sai Denpasar. *Kamaya: Jurnal Ilmu Agama*, *7*(1), 49-57. https://doi.org/10.37329/kamaya.v7i1.1759

Kusumawati, I. G. A. W., Gunawan, P. W., Nursini, N. W., & Yogeswara, I. B. A. (2020). PKM olahan gondo di Desa Timpag, Kecamatan Kerambitan, Kabupaten Tabanan, Bali. *J-Dinamika: Jurnal Pengabdian Masyarakat*, *5*(2), 83-88. https://doi.org/10.25047/j-dinamika.v5i2.2313

Medho, M. S., & Muhamad, V. E. (2024). Pengaruh blanching terhadap perubahan nilai nutrisi mikro tepung daun kelor (Moringa oleifera). *Partner: Jurnal Pertanian Terapan*, *2*, 1010–1019. http://dx.doi.org/10.35726/jp.v24i2.363

Moulia, M. N. (2018). Antimikroba ekstrak bawang putih. *Jurnal Pangan*, *27*(1), 55-66. https://doi.org/10.33964/jp.v27i1.399

Nugroho, P. (2020). Peran sekolah dalam pembentukan pendidikan karakter di era revolusi industri 4.0. *KoPeN: Konferensi Pendidikan Nasional*, *2*(1), 212-218.

Panjaitan, T. F. C., Panjaitan, P. S. T., Adi, C. P., & Soeprijadi, L. (2021, October). Study of the use of Gracilaria sp from the Karawang Area and Ulva lactuca as raw material making of Nori. In *IOP Conference Series: Earth and Environmental Science*, *860*(1). https://doi.org/10.1088/1755-1315/860/1/012068

Putri, R. T., Hardjito, L., & Santoso, J. (2020). Optimasi hidrolisis mikrobiologi serta bioaktivitas antibakteri, antioksidan, dan antikoagulan hidrolisat Ulva lactuca. *Jurnal Pascapanen dan Bioteknologi Kelautan dan Perikanan*, *15*(2), 123. http://dx.doi.org/10.15578/jpbkp.v15i2.657

Sukadi, S., Novarini, N., & Porawati, H. (2020). Peningkatan proses pengolahan kerupuk ikan di Desa Bagan Pete Kecamatan Alambarajo Kota Jambi. *Aptekmas Jurnal Pengabdian Pada Masyarakat*, *3*(3), 1-5. https://doi.org/10.36257/apts.v3i3.2121

Widyamurti, N. (2018). Pemasaran pariwisata melalui kemasan produk ukm standing pouch berbahan paper metal di era ekonomi kreatif. *Jurnal Industri Kreatif dan Kewirausahaan*, *1*(1), 1-9. https://doi.org/10.36441/kewirausahaan.v1i1.45