Published by CV Rezki Media

DARMABAKTI: Jurnal Pengabdian kepada Masyarakat

e-ISSN 3089-1612 | Vol. 3 No. 1 November 2026, pp. 19-26

Pembuatan healthy fruity-veggie gummy berbahan dasar buah naga dan sayur bayam untuk cegah stunting anak usia dini

Community-based production of dragon fruit and red spinach gummies to support stunting prevention among preschool children

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ARTICLE INFO

Received: 2026-04-02
Revised: 2026-05-15
Accepted: 2026-06-02
Published: 2026-07-19

Keywords
Early childhood; gummy; organoleptic; stunting.

ABSTRACT

Stunting remains a major nutritional challenge among Indonesian children and requires community-based interventions that promote healthy dietary practices. This community service program aimed to improve the knowledge and skills of members of the Rumah Cinta Dahlia Family Welfare Movement (PKK) in producing healthy gummies made from dragon fruit (Hylocereus polyrhizus) and red spinach as an alternative nutritious snack to support stunting prevention among children. The program involved nutrition education, practical training in gummy production, and evaluation through pre- and post-tests. A total of 46 PKK members participated in the activity. During the training, participants learned how to use lemon and citric acid as preservatives. The resulting gummies were then evaluated for texture, taste, aroma, appearance, shelf life, and consumer preference. The gummy production process involved mixing dragon fruit juice, red spinach extract, gelatin, and preservative agents, followed by molding and refrigerated storage for 35 days. The results showed that the proportion of participants with high knowledge increased from 65% before the intervention to 100% after the training. Sensory evaluation indicated that gummies preserved with lemon were preferred by 70% of participants, while 30% preferred those preserved with citric acid. The findings indicate that lemon may serve as a suitable natural preservative with good consumer acceptance and storage stability. Overall, the program successfully improved participants' knowledge and practical skills in preparing nutritious food products and demonstrated the potential of dragon fruit and red spinach gummies as an innovative snack to support household-level stunting prevention efforts.

Kata Kunci
Anak usia dini; gummy; organoleptik; stunting.

Stunting masih menjadi tantangan gizi utama di kalangan anak-anak Indonesia dan memerlukan intervensi berbasis masyarakat yang mendorong praktik pola makan sehat. Program pengabdian masyarakat ini bertujuan untuk meningkatkan pengetahuan dan keterampilan anggota Gerakan Kesejahteraan Keluarga (PKK) Rumah Cinta Dahlia dalam memproduksi permen jelly sehat berbahan dasar buah naga *(Hylocereus polyrhizus)* dan bayam merah sebagai camilan bergizi alternatif untuk mendukung pencegahan stunting pada anak-anak. Program ini mencakup pendidikan gizi, pelatihan praktis dalam pembuatan permen jelly, serta evaluasi melalui tes pra dan pasca. Sebanyak 46 anggota PKK berpartisipasi dalam kegiatan ini. Selama pelatihan, peserta belajar cara menggunakan lemon dan asam sitrat sebagai bahan pengawet. Permen jelly yang dihasilkan kemudian dievaluasi berdasarkan tekstur, rasa, aroma, penampilan, masa simpan, dan preferensi konsumen. Proses produksi permen jelly melibatkan pencampuran jus buah naga, ekstrak bayam merah, gelatin, dan bahan pengawet, diikuti dengan pencetakan dan penyimpanan dalam lemari es selama 35 hari. Hasil menunjukkan bahwa proporsi peserta dengan pengetahuan tinggi meningkat dari 65% sebelum intervensi menjadi 100% setelah pelatihan. Evaluasi sensorik menunjukkan bahwa permen jelly yang diawetkan dengan lemon disukai oleh 70% peserta, sementara 30% lebih menyukai yang diawetkan dengan asam sitrat. Temuan tersebut menunjukkan bahwa lemon dapat berfungsi sebagai bahan pengawet alami yang sesuai, dengan tingkat penerimaan konsumen yang baik dan stabilitas penyimpanan yang memadai. Secara keseluruhan, program ini berhasil meningkatkan pengetahuan dan keterampilan praktis para peserta dalam menyiapkan produk makanan bergizi, serta menunjukkan potensi permen jelly buah naga dan bayam merah sebagai camilan inovatif untuk mendukung upaya pencegahan stunting di tingkat rumah tangga.

How to cite: Putri, W. P., Rahmatullah, Haryati, S., Bahrin, D., Jannah, A. M., Fitri, R. F., Hadi, A. A., & Rizqi, F. Z. (2026). Community-based production of dragon fruit and red spinach gummies to support stunting prevention among preschool children. *DARMABAKTI: Jurnal Pengabdian kepada Masyarakat*, *3*(1), 19-26. https://doi.org/10.56003/darmabakti.v3i1.745

INTRODUCTION

Gummy candy is a type of confectionery characterized by a soft, jelly-like texture (Amalia, 2021). Gummy candy is made from a mixture of sugar, sweeteners, fruit juice, and gelling agents such as carrageenan and gelatin (Rashati & Eryani, 2019). Gummy candy is widely popular for its soft, chewy texture and attractive variety of colors, flavors, and shapes, which capture consumers' attention and appeal to their tastes (Eryani et al., 2024). Dragon fruit is a valuable agricultural commodity; however, post-harvest losses remain a common problem. According to a report by the Badan Pusat Statistik (BPS) (2024), dragon fruit cultivation in 2023 reached 7,587,160 trees, marking a 20.02% increase from the previous year's total of 6,320,442 trees. Meanwhile, total dragon fruit production in 2023 reached 317,407 tons. Dragon fruit is classified as a non-climacteric fruit, meaning harvesting must be conducted when the fruit reaches optimal ripeness to ensure the best quality (Widodo et al., 2020). Its extremely short shelf life makes dragon fruit susceptible to spoilage, thereby reducing product value and quality (Asniati et al., 2023). The limited use of dragon fruit, currently restricted to fresh fruit and juice, is one factor that may hinder increased public consumption (Melana et al., 2023). Fresh dragon fruit cannot be stored for long, so prices often drop during peak harvest season (Aryanta et al., 2022). Dragon fruit prices also frequently decline, especially when harvests are abundant (Nurkaya, 2020).

Red dragon fruit (Hylocereus polyrhizus) is a type of dragon fruit that offers numerous health benefits (Rahmayulis et al., 2023). The benefits of red dragon fruit include its antioxidant properties, as it contains bioactive antioxidant compounds (such as ascorbic acid, beta-carotene, and anthocyanins) (Harni et al., 2023). Dragon fruit, also known as pitaya, is highly nutritious, and every part of the fruit—including the skin, flesh, and seeds—is rich in polyphenols, flavonoids, antioxidants, sugars, dietary fiber, vitamins, and minerals. The combination of antioxidants, vitamins, and fiber makes dragon fruit a valuable addition to a balanced diet. This fruit has potential for use in antidiabetic, anticancer, and nutraceutical formulations (Kumari et al., 2025). In addition to antioxidant-rich dragon fruit, red spinach is also a nutrient-dense "superfood." Based on an analysis of iron (Fe) content in green and red spinach. Spinach is rich in iron (Fe) (Aprita et al., 2023). The average iron (Fe) content of green spinach is 0.0740 ± 0.0032 mg/100 g, and the average iron (Fe) content of red spinach is 2.0744 ± 0.4273 mg/100 g. Spinach is one of the alternatives for pregnant women and toddlers to prevent stunting (Triani et al., 2021). In addition to being nutrient-rich, vegetables and fruits such as red spinach contain nitrates, which are essential for the production of nitric oxide in the body via the nitrate-nitrite-nitric oxide pathway (Johnson et al., 2025). Furthermore, it has been reported that red spinach helps reduce oxidative stress and inflammation, inhibits the growth of vascular smooth muscle, and lowers the risk of atherosclerosis and coronary heart disease. Researchers have emphasized the importance of consuming nitrate-rich vegetables for overall health (Martin & Bloomer, 2022).

The prevalence of stunting in Indonesia decreased by 6.4% between 2013 and 2018, according to Riskesdas data cited by Aiman et al. (2026). The 2024 SSGI results show that the national prevalence of stunting has dropped to 19.8%. This achievement marks a significant step toward the long-term goal of reducing stunting to 5% by 2045 (Lestari, 2025). These fruits and vegetables can be processed into gummies, instant drinks, yogurt, and fruit leather (Setiani et al., 2024; Putriningtyas & Budiono, 2022; Fadhila et al., 2022; Amrinola & Hanandhiya, 2025). One approach to addressing this issue is the development of nutritious, child-friendly food products through community-based education programs. This initiative uses dragon fruit and red spinach as raw materials to convert these vegetables and fruits into healthy gummies, ensuring they are not wasted and can become beneficial products (Melana et al., 2023). Fruits and vegetables are rich in various phytochemical compounds with remarkable pharmacological properties. Traditionally, these fruits have been used as natural dyes (Joshi et al., 2023). Rumah Cinta Dahlia PKK was selected as the target community because many of its members reported that young children under their care were reluctant to consume fruits and vegetables. To address this challenge, the community service program introduced an innovative, nutritious food product: dragon fruit-red spinach gummies. The activity aimed to enhance participants' knowledge and skills in preparing healthy snack alternatives and to increase awareness of the nutritional benefits of fruits and vegetables for child growth and development. In addition, participants received practical training and demonstrations on gummy production, enabling them to replicate the product at home. The program is expected to support household-level stunting prevention efforts by promoting healthier dietary practices and improving participants' capacity to prepare nutritious foods for children.

Based on the focus of activities aimed at increasing fruit and vegetable consumption among young children through healthy food innovations in the form of dragon fruit- and red spinach-based gummies as a means of preventing stunting, this community service initiative aligns with the Sustainable Development Goals (SDGs), particularly SDG 2: Zero Hunger and SDG 3: Good Health and Well-being. By utilizing locally sourced foods rich in vitamins, minerals, fiber, and

antioxidants, this initiative improves children's nutrition. It supports efforts to reduce stunting, which remains a public health challenge in Indonesia. Additionally, training community members in processing dragon fruit and red spinach into innovative food products supports enhancing families' knowledge and skills in providing nutritious meals for children. Thus, this initiative not only supports food security and improves the community's nutritional status but also contributes to achieving sustainable development goals by fostering a healthy, productive, and stunting-free generation.

METHODS

The community service program was implemented through three stages. The first stage involved a situation analysis and outreach activities to identify community needs and raise awareness of nutrition-related issues. The second stage consisted of training and hands-on guidance on preparing healthy fruit-and-vegetable gummies made with dragon fruit and spinach. The final stage involved follow-up assistance and evaluation to assess participants' knowledge, skills, and application of the training outcomes at the household level. In addition, participants were introduced to the potential economic value of the product and encouraged to explore opportunities for small-scale production and entrepreneurship.

a. Outreach

The first phase of the community service program involved an initial coordination meeting with the Chair of the Rumah Cinta Dahlia PKK, followed by a site survey to identify community needs and plan the implementation of the activity. Subsequently, an outreach session was conducted with PKK members to increase awareness of nutrition-related issues, particularly stunting prevention among young children. The program aimed to equip participants with knowledge and practical skills to prepare healthy fruit-and-vegetable gummies as a nutritious snack alternative for children. During the session, participants received information on the nutritional benefits of dragon fruit and spinach, followed by a live demonstration of gummy preparation conducted by the project team.

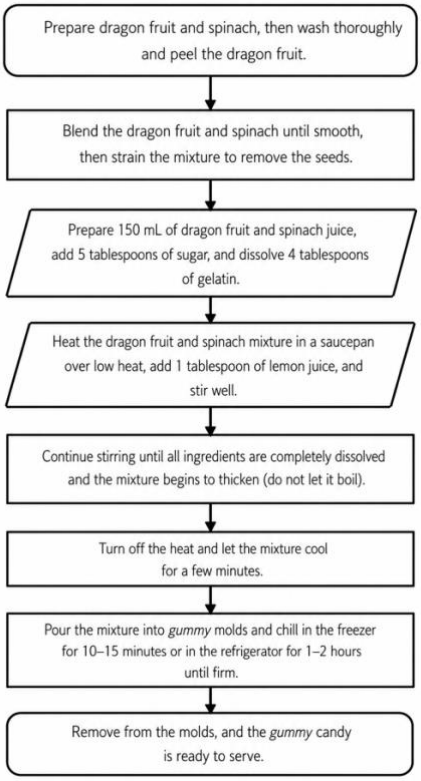

Figure 1. Flowchart for Making Gummies with a Natural Preservative (Lemon)

b. Training and technical guidance

This training program consisted of three stages: providing information on food processing using sugar-coating technology, and demonstrations of cooking or making Healthy Fruity-Vegie Gummy products made from dragon fruit and spinach. The gummy candy production process involves several stages, namely mixing the base ingredients, heating, cooling, molding, and packaging (Eryani et al., 2024). In the gummy candy production process, commonly used gelling agents include gelatin, carrageenan, pectin, and agar (Tarahi et al., 2023). The activity concluded with the packaging process to make the product more appealing. For products intended for commercialization, citric acid was added at

permitted levels. For the artificial preservative (citric acid), the same process shown in Figure 1 is followed; however, citric acid is added by dissolving 0.1 g in 1 tablespoon of water, in accordance with safety guidelines for its use in food. Citric acid is safe for use in food, generally at concentrations of 0.05%–1.0% (Eryani et al., 2024). The production process for the healthy fruit-and-vegetable gummies made from dragon fruit and spinach is shown in the flowchart in Figure 1.

c. Mentoring and Evaluation

Post-test assessments and follow-up mentoring were conducted to evaluate participants' understanding and to support the application of the training outcomes. This success is measured through evaluations of capacity building (knowledge/skills) as well as validation of product and market readiness. Evaluations were conducted using structured questionnaires to measure technical understanding and innovation strategies for commercialization. Periodic mentoring for the commercialization of innovative products was carried out in a phased, structured manner from the conceptual phase through market acceptance.

RESULTS AND DISCUSSION

Pre-implementation

Initial Outreach Activities

This community service project commenced with an assessment of participants' knowledge and practices regarding providing healthy foods for children, particularly fruit and vegetable consumption. During the preliminary outreach session on October 8, 2025 (Figure 2), many participants reported a common challenge: young children in their care were reluctant to eat vegetables. To address this issue, the program introduced an nutritious snack alternative: healthy fruit-and-vegetable gummies made from dragon fruit and red spinach. Prior to the educational intervention, a pre-test was administered to 46 PKK members to evaluate their baseline knowledge and understanding of stunting prevention and healthy nutrition.

Figure 2. Situation Analysis and Initial Outreach with PKK Members

Training and Technical Guidance Activities

The training session was conducted on October 25, 2025, during which participants were directly involved in preparing healthy fruit-and-vegetable gummies, as illustrated in Figure 3. This community outreach activity aimed to enhance PKK members' skills in processing fruits and vegetables into nutritious snack products. In addition to promoting healthy dietary practices, such value-added products may also provide potential income-generating opportunities for local communities (Slamet et al., 2022). Participants actively engaged in the training activities and discussion sessions. Furthermore, an educational session was delivered to increase participants' knowledge of the nutritional benefits of dragon fruit and red spinach, particularly their potential to improve dietary quality and support child nutrition.

Figure 3. Demonstration of How to Make Healthy Fruity Veggie Gummies

Figure 4. Group Photo with Participants

The community service program was attended by 46 members of the Rumah Cinta Dahlia PKK (Family Welfare Movement), six faculty members, and twelve students. The activity was conducted in an interactive and informative manner through presentations, demonstrations, and discussion sessions. The program commenced with opening remarks from the Chair of the Rumah Cinta Dahlia PKK, followed by a welcoming address from the Vice Dean for Research and Community Service of the Faculty of Engineering. Educational materials on the nutritional benefits of dragon fruit and spinach and their potential role in supporting stunting prevention were subsequently presented by student representatives. This session was followed by a hands-on demonstration on the preparation of healthy fruit-and-veggie gummies conducted by the project leader. Participants actively engaged in the discussion session by asking questions related to the materials and production process. To evaluate the effectiveness of the educational intervention, a pre-test was administered before the presentation and a post-test was conducted after the completion of the training. The program concluded with a group photo session involving all participants, faculty members, and students.

Evaluation Activities

The community service activity concluded with a post-test evaluation to assess increases in awareness and knowledge of preparing healthy vegetable- and fruit-based snacks in households. As shown in Figure 5, this post-test evaluation used a combination of qualitative assessment and descriptive categories, such as “very good,” “understand,” and “do not understand.”

Figure 5. Final Evaluation Documentation

To assess participants' understanding of the material and their ability to prepare healthy fruit-and-veggie gummies, a post-test evaluation was conducted. Instructions for preparing the gummies were provided in a leaflet so that participants could reproduce them independently at home.

Comparison of Shelf Life

Gummies preserved with lemon tended to maintain flavor and texture stability slightly longer than those preserved with citric acid. Gummies preserved with citric acid show good initial stability but may experience sensory degradation and microbial contamination more quickly, with an effective shelf life of only 25–30 days. This is illustrated in Figure 6 to investigate its effect on fungal (contaminant) growth. At the same time, Table 1 shows the physical properties, texture, and sensory quality of the gummy candies, which will influence consumer acceptance (Renaldi et al., 2022).

(a) (b)

Figure 6. (a) Condition of Lemon Preservative Agar After 1 Day of Storage; (b) Condition of Lemon Preservative Agar After 35 Days of Storage

Table 1. The Condition of Gummy During Storage

Preservative	Time to visible mold growth	Observed Condition	Texture
Lemon	Mold growth observed on day 35	Presence of Mold Growth	Soft and Chewy
Citric Acid	Mold growth observed on day 30	Presence of Mold Growth	Soft and Mushy

Pretest and Posttest Results

A pre-test assessment was conducted to evaluate participants' knowledge and practices related to healthy eating habits among children. The results showed that 65% of participants had children aged 1–10 years and reported difficulties in providing adequate fruit and vegetable intake because their children were reluctant to consume these foods. Furthermore, 90% of participants had no prior knowledge or experience in preparing gummy products. Although most participants were familiar with preparing agar-based desserts, they had limited knowledge of producing gummy products with a longer shelf life. The findings also revealed that 20% of participants reported having children affected by stunting. In addition, frequent consumption of high-sugar snacks among children was identified as a common concern among participants.

Table 2. Pretest and Posttest Results

Knowledge Category	n	%
Pre-test		
Adequate Knowledge	30	65.2
Inadequate Knowledge	16	34.8
Post-test		
Adequate Knowledge	46	100.0
Inadequate Knowledge	0	0.0

Based on the post-test questionnaire completed by 46 respondents, the proportion of participants with adequate knowledge increased from 65.2% before the training to 100% after the training, representing an increase of 34.8 percentage points (Table 2). Before the intervention, only 30 participants demonstrated adequate knowledge of gummy production; after the training, all 46 participants understood the gummy-making process and correctly answered the post-test questions. Among the two gummy varieties distributed as samples, 70% preferred the lemon-preserved gummies, while 30% preferred the citric acid-preserved gummies (Figure 7).

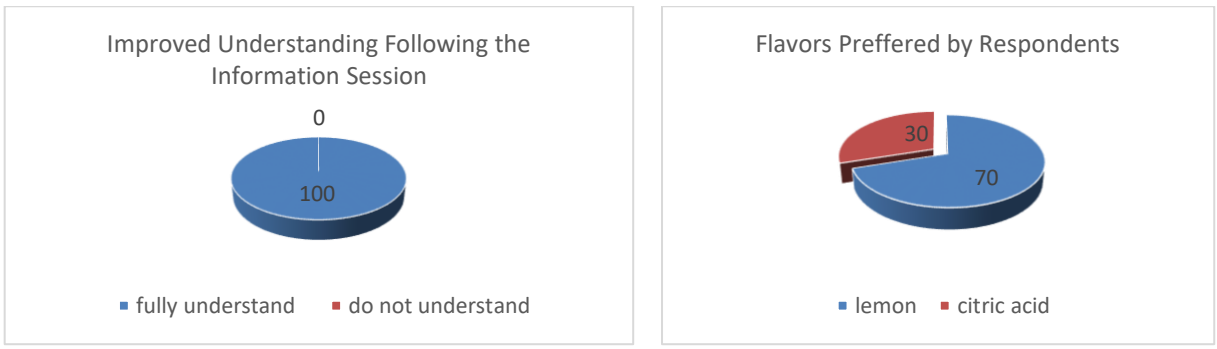

Figure 7. Participants' Post-test Knowledge and Preferences for Lemon- and Citric Acid-Preserved Dragon Fruit and Red Spinach Gummies

CONCLUSION

The community service program successfully improved the knowledge and practical skills of PKK members in producing healthy gummies made from dragon fruit and red spinach as a nutritious snack alternative to support stunting prevention among children. The proportion of participants with adequate knowledge increased from 65.2% before the training to 100% after the intervention. Participants responded positively to the product, particularly the lemon-preserved gummies, which showed better sensory acceptance and slightly longer storage stability than gummies preserved with citric acid. Overall, the program enhanced community awareness of healthy food preparation and demonstrated the potential of locally available fruits and vegetables to support household-level nutrition improvement.

ACKNOWLEDGMENTS

The authors gratefully acknowledge Sriwijaya University for funding this community service program through the Sriwijaya University Budget for Fiscal Year 2025 under Rector's Decree No. 0014/UN9/SK.LPPM.PM/2025, dated September 17, 2025. The University's financial support was instrumental in the successful implementation of this project. Thank you to the members of the PKK Rumah Cinta Dahlia, Sungai Selayur Village, Kalidoni Subdistrict, South Sumatra for their active participation in this community service.

REFERENCES

Aiman, U., Nurulfuadi, N., Hijra, H., Randani, A. I., Riskika, F., Nadila, D., Ekawati, T. N. (2026). Edukasi Tentang Pangan Lokal Sebagai Asupan Gizi Harian Bagi Balita Untuk Pencegahan Stunting Di Desa Sibedi, Kecamatan Marawola, Kabupaten Sigi. *Jurnal Abdi Insani, 12*(12), 6552–6558. https://doi.org/10.29303/abdiinsani.v12i12.2527

Amalia, R. R., Lestari, E., dan Safitri, N. E. 2021. Pemanfaatan jagung (Zea mays) sebagai bahan tambahan dalam pembuatan permen Jelly. *Teknologi Pangan: Media Informasi Dan Komunikasi Ilmiah Teknologi Pertanian, 12*(1), 123-130. https://doi.org/10.35891/tp.v12i1.2163

Amrinola, W., & Sekarningrum, H. (2025). Pengaruh Penambahan Ekstrak Kulit Buah Naga terhadap Karakteristik Fisikokimia, Aktivitas Antioksidan, dan Sensori Permen Jeli Glukomanan Konjak. *FaST: Jurnal Sains dan Teknologi, 9*(1), 209-225. https://doi.org/10.19166/jstfast.v9i2.10389

Aprita, I. R., Kemalawaty, M., Anwar, C., Febri, S. P., & Nazlia, S. (2023). The effect of adding red spinach leaf extract (Amaranthus tricolor) with different concentrations on the quality of chicken meatballs. *Jurnal Ilmiah Samudra Akuatika, 7*(1), 9-18. https://doi.org/10.33059/jisa.v7i1.7547

Aryanta, I. W. R. (2022). Manfaat Buah Naga Untuk Kesehatan. *Widya Kesehatan, 4*(2), 8-13. https://doi.org/10.32795/widyakesehatan.v4i2.3386

Asniati, A., Asra, R., & Adriadi, A. (2023). Kualitas Dan Daya Simpan Buah Naga (hylocereus costaricencis) dengan Edible Coating Pektin Kulit Buah Kakao dan Penambahan Ekstrak Jahe (Zingiber officinale): Quality and Shelf Life of Dragon Fruit with Edible Coating of Cocoa Pod Peel Pectin and Addition of Ginger Extract. *Biospecies, 16*(1), 70-79. https://doi.org/10.22437/biospecies.v16i1.20548

Badan Pusat Statistik. (2025). Produksi Tanaman Buah-buahan dan Sayuran Tahunan Menurut Provinsi dan Jenis Tanaman, 2024. Diakses dari https://www.bps.go.id/id/statistics-

Eryani, M. C., Handojo, K. J., Safitri, M., & Husni, P. (2024). Formulasi Dan Evaluasi Sediaan Gummy Candies Mengandung Infusa Daun Jambu Biji (Psidium guajava L.) Dengan Variasi Konsentrasi Sukrosa. *Jurnal Farmasi Galenika, 11*(3), 152-162. https://doi.org/10.70410/jfg.v11i3.347

Fadhila, P.T., Kusumaningtyas, R.N., Subaktilah,Y., & Rakhmadevi, A.G.(2022). Aktivitas antioksidan dan karakteristik kimia fruit leather buah naga merah (hylocereus polyrhizus) dengan subtitusi labu kuning (cucurbita moschata). *Jurnal Teknologi Agro-Industri, 9*(1), 34-45. https://doi.org/10.34128/jtai.v9i1.151

Harni, M., Anggraini, T., Rini, B., & Suliansyah, I. (2023). Identifikasi Kualitas Warna Buah Naga (Hylocerecus) Dengan Ekstraksi Menggunakan Microwave-Assisted Extract (Mae). *Jurnal Teknologi Pertanian Andalas, 27*(1), 104-109. https://doi.org/10.25077/jtpa.27.1.104-109.2023

Johnson, T. S., de'Souza, A., Patil, S. A., & Vora, A. (2025). Safety assessment of red spinach as a potential sports nutrition supplement: An evidence based comprehensive overview. *Future Foods*, 100806. https://doi.org/10.1016/j.fufo.2025.100806

Joshi, M., & Prabhakar, B. (2020). Phytoconstituents and pharmaco-therapeutic benefits of pitaya: A wonder fruit. *Journal of Food Biochemistry, 44*(7), e13260. https://doi.org/10.1111/jfbc.13260

Kumari, S., Thakur, D., Singh, S., Bakshi, M., & Singh, S. K. (2025). Dragon fruit: Exploring bioactive compounds and their promising role in functional food innovation and value-added products. *Journal of Food Composition and Analysis, 141*, 107370. https://doi.org/10.1016/j.jfca.2025.107370

Lestari, T. R. P. (2025). Evaluasi Kebijakan dan Strategi Penurunan Angka Stunting pada Tahun 2024. *Aspirasi: Jurnal Masalah-masalah Sosial, 16*(1), 71-86. https://doi.org/10.46807/aspirasi.v16i1.4800

Martin, K. R., & Bloomer, R. J. (2022). Nitrate and human health: An overview. *Nitrate Handbook*, 303-345. https://doi.org/10.1201/9780429326806

Melana, R., Ahmad, M., Haipi, R., Baruadi, M. H., & Saleh, Y. (2023). Pengabdian Pada Masyarakat Dalam Mengembangkan Produk Pertanian Buah Naga Menjadi Selai Buah Naga. *Jurnal Pengabdian Masyarakat Teknologi Pertanian, 2*(2), 222-226. https://ejurnal.ung.ac.id/index.php/jpmtp/article/view/23855

Nurkaya, H. (2020). Sifat Kimia Dan Organoleptik Permen Jelly Buah Naga (Hylocereus Polyrhizus) Dengan Penambahan Karagenan Sebagai Gelling Agent. *Buletin Loupe: Politeknik Pertanian Negeri Samarinda, 16*(1), 8-13. https://doi.org/10.51967/buletinloupe.v16i01.69

Putriningtyas, N. D., & Budiono, I. (2022). Yogurt Kulit Buah Naga Merah dan Hiperglikemia. *Bookchapter Kesehatan Masyarakat Universitas Negeri Semarang*, (2), 101-129. https://doi.org/10.15294/km.v1i2.76

Rahmayulis, R., & ulan Dari, T. (2023). Penetapan Kadar Pektin dan Metoksil Kulit Buah Naga Merah (Hylocereus Polyrhizus) yang Diekstraksi Dengan Metode Refluks. *Jurnal Mipa, 12*(2), 38-42. https://doi.org/10.35799/jm.v12i2.44984

Rashati, D., & Eryani, M. C. (2019). Evaluasi Sifat Fisik Sediaan Shampo Ekstrak Daun Katuk (Sauropus androgynus (L) Merr) Dengan Berbagai Variasi Viscosity Agent. *Jurnal Riset Kefarmasian Indonesia, 1*(1), 56-63. https://doi.org/10.33759/jrki.v1i1.6

Renaldi, G., Junsara, K., Jannu, T., Sirinupong, N., & Samakradhamrongthai, R. S. (2022). Physicochemical, textural, and sensory qualities of pectin/gelatin gummy jelly incorporated with Garcinia atroviridis and its consumer acceptability. *International Journal of Gastronomy and Food Science, 28*, 100505. https://doi.org/10.1016/j.ijgfs.2022.100505

Setiani, N. A., Baroroh, U., Kelana, H. W., Ardiansyah, S. A., Mardiah, I., & Nela, N. (2024). Pemanfaatan Buah Naga Merah Menjadi Produk Minuman Probiotik di Esa Kareem Primary School. *Jurnal Abdimas Kartika Wijayakusuma, 5*(2), 245-251. https://doi.org/10.26874/jakw.v5i2.383

Slamet, A. H. H., Mutmainah, D. N., Rizqullah, R., & Apriani, F. (2022). Analisis nilai tambah dan strategi pengembangan industri olahan kulit buah naga di Kabupaten Banyuwangi, Jawa Timur. *Food Scientia: Journal of Science and Technology, 2*(1), 20-47. https://doi.org/10.33830/fsj.v2i1.2686.2022

Tarahi, M., Tahmouzi, S., Kianiani, M. R., Ezzati, S., Hedayati, S., & Niakousari, M. (2023). Current innovations in the development of functional gummy candies. *Foods, 13*(1), 76. https://doi.org/10.3390/foods13010076

Triani, N., Syafriani, E., & Somala, M. U. A. (2021). Penyuluhan Pertanian Sehat Budi Daya Bayam Merah (Amaranthus tricolor L.) di Desa Jabung Kabupaten Ponorogo. *Jurnal SOLMA, 10*(1), 94-102. https://doi.org/10.22236/solma.v10i1.5515

Widodo, W. D., Suketi, K., & Maulida, F. (2020). Studi degreening, kesegaran, dan daya simpan buah naga merah (Hylocereus polyrhizus (Weber) Britton & Rose) untuk menentukan kriteria panen optimum. *Jurnal Agronomi Indonesia (Indonesian Journal of Agronomy), 48*(3), 314-322. https://doi.org/10.24831/jai.v48i3.33065