JPPIPA 10(12) (2024)

Jurnal Penelitian Pendidikan IPA

Journal of Research in Science Education

http://jppipa.unram.ac.id/index.php/jppipa/index

Pre-Serum Extract of Various Lime Mixed Rhizomes and Honey as A Functional Drink for Stamina for The Elderly

Ketut Wiradnyani[1]*, I Made Yoga Parwata[2]

[1] Nutrition Study Program, Faculty of Health, Dhyana Pura University, Surakarta, Indonesia.
[2] Physiotherapy Study Program, Faculty of Health, Dhyana Pura University, Surakarta, Indonesia.

Received: September 11, 2024
Revised: October 9, 2024
Accepted: December 25, 2024
Published: December 31, 2024

Corresponding Author:
Ketut Wiradnyani
wiradnyani@undhiabali.ac.id

DOI: 10.29303/jppipa.v10i12.9623

Abstract: Sinom is a functional drink made from turmeric and young tamarind leaves. In its development, it has gone through in vitro and in vivo tests. In its development, Sinom underwent a change in formula after mixing lime and honey. Then it underwent a change in formulation as a serum in which the turmeric ingredient was replaced with various rhizomes, such as white turmeric rhizome, temu black, meet jokes and meetups black. This research aims to determine the macro compound content and the level of preference for the sinom pre-serum functional drink, a mixture of lime and honey from various rhizomes. This research uses an experimental method with a completely randomized design, determining proximate tests using treatment; S1R1 (Tumeric Rhizome mixed with lime and honey), S2R2 (White Turmeric Rhizome mixed with lime and honey), S3R3 (Rhizome of Temu Ireng mixed with lime and honey), S4R4 (Rhizome of Temu Lawak mixed with lime and honey), SxRx (Rhizome turmeric, white turmeric, temu black, meet buffoonery) a mixture of lime and honey. Proximate testing and organoleptic preference levels were carried out.The proximate test results are; S1R1; water content (70.111%), ash content (0.713%), protein content (0.758%), pH (3.995), S2R2 (white turmeric): water content (72.355%), ash content (0.831%), protein content (0.879 %), pH(3.836); S3R3: water content (75.788%), ash content (0.605%), protein content (0.766%), pH (3.728); S4R4: water content (75.975%), ash content (0.755%), Protein content 0.884%), pH (3.826); SxRx : water content (76.617%), ash content (0.777%), protein content (0.885%), pH (3.975). Organoleptic Test Results: SxRx's most preferred taste (4.03%), SxRx's aroma (3.96%), S4R4's color (4.00%) and S2R2's texture (3.36%). The conclusion obtained from this research was that the highest average water content was in the sinom treatment using turmeric rhizomes, white turmeric, curcuma ireng and curcuma (76.617%); Ash content in sinom using white turmeric (0.831%), the highest protein content in mixed sinom using various rhizomes (0.885%), the highest pH was found in sinom using turmeric rhizomes (3.995).

Keywords: Organoleptic; Pre-serum; Proximate; Sinom various rhizomes

Introduction

This study uses a mixed solution of sinom water, orange, lime, and honey (ASCJM Pre -serum) made from various rhizome and leaves sour young Then mixed with orange juice lime and honey (Nabilla, 2022; Rubiyanto et al., 2023; Suciyati & Retnaningati, 2024). Ingredients base sinom originate from combination various rhizome as much as 50 grams obtained at the traditional market Badung Denpasar Bali, and 250 grams of leaves sour young taken from shoot leaf until strands seventh from area Sinom as much as 100 ml then mixed with 10 grams of orange juice thin and 10 grams of honey

How to Cite:
Wiradnyani, K., & Parwata, I. made Y. (2025). Pre-Serum Extract of Various Lime Mixed Rhizomes and Honey as A Functional Drink for Stamina for The Elderly. *Jurnal Penelitian Pendidikan IPA*, *10*(12), 11287–11293. https://doi.org/10.29303/jppipa.v10i12.9623

black origin Sumba area (Sholihah, 2023; Sundari et al., 2022).

Sinom mixture orange thin (SCJM) or Pre -Serum various water fractions rhizome produced with the previous formula yields 600 ml in One the bottle, but after changed the formula into serum, then various serums rhizome yields 200 ml in One bottle, conversion each rhizome produces 50 ml of serum, such as seen in Figure 1 (Pratiwi et al., 2024).

Figure 1. Conversion process sinom become various serum rhizome mixture orange thin and honey

Method

Sample preparation begins with the manufacture of Pre-serum with a formulation to make sinom (a mixture of 50 grams of turmeric and 250 grams of young tamarind leaves) processed by adding 50 grams of turmeric to 400 ml of water then blending for 3.5 minutes then filtering, boiling for 1 minute (called filtrate a or turmeric filtrate), 250 grams of young sam leaves from the tip of the leaf to the 7th strand are added to 300 ml of water then blended for 3.5 minutes, filtered, boiled for 1 minute (called filtrate b or young tamarind leaf filtrate). To obtain the sinom filtrate by combining (filtrate a and filtrate b). Pre-serum is made by adding 10 grams of turmeric to sinom (S1R1), adding 16 grams of white turmeric (S2R2), adding 18 grams of black ginger (S3R3), adding 16 grams of ginger lawak (S4R4), then a combination of various rhizomes that weigh according to the type of previous rhizome (sxRx) (Islam, 2022). Furthermore, to obtain a mixed lime sinom (SCJM), the above formulation is added with 15 grams of lime filtrate and 10 grams of honey, and then it is ready to be used as a Pre-serum sample (Alipin et al., 2022).

Serum Making (Amellita et al., 2023). Pre-serum ingredients without water consisting of; Young tamarind leaves, black ginger, white turmeric, ginger lawak, lime and honey are weighed as much as 250, 18, 16, 16, 16, 15, and 10 gr then washed clean, sprayed with 60 ^{o}C water then sliced into small pieces then kneaded by adding 10 gr of unrefined cane sugar then fermented for 1 week aerobically, then filtered then called a sample that is ready to be used as serum (Sulistyaningsih et al., 2023).

Figure 2. Process of Making Sinom Serum Mixture Orange Thin and Honey

The serum sample was added with 30 percent cane sugar and fermented for 1 week, then squeezed with gauze, then 10 percent of the weight of the serum extract was added to the sample, ready to be used as a sample for further in vivo and in vitro tests (Osunrinade et al., 2023). Organoleptic test done as many as 2 times. Stage First, the panelists as many as 10 people entered in a way together and sitting separately (Nijabat et al., 2024). Researchers ensure that the panelists No do discussion about evaluation sample. Encoding sample done in a way random. Assessment in a way Overall conducted by 20 panelists consisting of from panelist consumers (PWI patients) and semi- trained panelists. Requirements become panelist is condition body healthy and not in condition hungry. Senses taster neutralized with plain water moreover first. Stages the making of it like seen in Figure 2 (Abel et al., 2023).

Results and Discussion

Table 1. Proximate test average value pre -serum various rhizome

Treatment	Proximate Test Average Value			
	Water content	Ash Content	K. Protein	pH
S1R1 (turmeric) normal)	$70.111^{a} \pm 0.02$	$0.713^{a} \pm 0.02$	$0.758^{a} \pm 0.07$	$3.995^{b} \pm 0.76$
S2R2 (turmeric) white)	$72.355^{b} \pm 0.05$	$0.831^{b} \pm 0.05$	$0.879^{b} \pm 0.50$	$3.836^{b} \pm 0.76$
S3R3 (meeting) black)	$75.788^{c} \pm 0.15$	$0.605^{c} \pm 0.10$	$0.766^{b} \pm 0.10$	$3.728^{a} \pm 0.76$
S4R4 (meeting) joke)	$75.975^{cd} \pm 0.10$	$0.755^{d} \pm 0.10$	$0.884^{c} \pm 0.50$	$3.826^{a} \pm 0.12$
SxRx (K,P,I,L)	$76.617^{c} \pm 0.07$	$0.777^{of} \pm 0.07$	$0.885^{b} \pm 0.07$	$3.975^{b} \pm 0.76$

Description: * Differences the notation (a,b,c,d,e) indicates significant difference

Testing pre-serum water content sinom mixture orange thin and honey show significant difference one with other sinom mixture orange thin and honey with various rhizome (Simon et al., 2024a). Different water content real in each treatment very different from study about level proximate extraction various rhizome use many kinds of solvent. Niu et al. (2024) stated that extraction curcumin done with method maceration use solvent N- hexane, ethyl acetate and ethanol show characteristics chemistry powder turmeric white that is more water, ash, fat and protein content low than powder turmeric yellow but level carbohydrates by difference powder turmeric white more tall than powder turmeric yellow (Das, 2022). For very high pH influenced by the presence of sour citrate contained in orange thin and type rhizome (Olaifa et al., 2020). Compound test results macro; water content, water content ash, protein content, pH and so on the addition is testing Bacteria Sour Lactate, as seen in Table 1.

Testing organoleptic which is called evaluation sensory or evaluation sensory is a method evaluation with utilize five sensory man For observe texture, color, aroma, taste, a product the food called panelist (Carroll & Simon, 2020). Panelist is the person involved in evaluation organoleptic from various impression subjective products presented (Zhang et al., 2024). Parameters used is level liking (scale hedonic) panelist on taste, color, texture and aroma. The selected panelists in study This is panelist rather trained as many as 20 students of the Study Program Nutrition University Dyana Pura (Drapal et al., 2023). Data on organoleptic

test results of Sinom Serum various rhizome mixture orange lime and honey in Table 2 (Saed et al., 2022).

Table 2. Average value of ASCJA serum organoleptic test

Treatment	Average Value of Organoleptic Test			
	Flavor	Aroma	Color	Texture
S1R1 (turmeric) normal)	$3.18^{a} \pm 0.02$	$3.13^{a} \pm 0.02$	$3.58^{a} \pm 0.07$	$3.33^{b} \pm 0.76$
S2R2 (turmeric) white)	$3.35^{b} \pm 0.05$	$3.31^{b} \pm 0.05$	$3.80^{b} \pm 0.50$	$3.36^{b} \pm 0.76$
S3R3 (meeting) black)	$3.78^{c} \pm 0.15$	$3.65^{c} \pm 0.10$	$3.86^{b} \pm 0.10$	$3.28^{a} \pm 0.76$
S4R4 (meeting) joke)	$3.91^{cd} \pm 0.10$	$3.91^{d} \pm 0.10$	$4.00^{c} \pm 0.50$	$3.26^{a} \pm 0.12$
SxRx (K,P,I,L)	$4.03^{c} \pm 0.07$	3.96 ± 0.07	$3.83^{b} \pm 0.07$	$3.23^{b} \pm 0.76$

Description: * Differences the notation (a, b, c, d, e) indicates significant difference with $p < 0.05$

Based on results analysis diversity, sinom serum treatment various rhizome mixture orange thin and honey influential real at the level 5% error of ANOVA statistical test ($p < 0.05$) on organoleptic test. Further test results different real the smallest show that each treatment ; from in terms of taste, S1R1 treatment (sinom with rhizome turmeric) is different real with S2R2 treatment (synom with rhizome turmeric white), and S3R3 (sinom with rhizome meeting ireng) but, Aroma treatment S1R1(sinom with rhizome turmeric), S2R2 (sinom with rhizome turmeric white), S3R3 (sinom with rhizome meeting black), different real One The same others, as well as S4R4 (sinom with rhizome meeting joke) with SxRx (synom with rhizome turmeric, turmeric white, temu black and ginger). Texture S1R1, S2R2, SxRx treatment different real with S3R3 and S4R4 treatment. Results of BNT analysis on color all treatment show existence difference real. Highest results obtained on sample SxRx (turmeric, turmeric white, temu black, meet joke) from in terms of taste, aroma, and for color on S4R4 (meet jokes), and S2R2 (turmeric) white) for Texture. The results of the ANOVA test on the aspect texture because $F_{count} < F_{table}$ then the BNT test is not continued. In terms of texture more S2R2 samples liked (Djoufack et al., 2023).

Based on Figure 3, the organoleptic test value against various serums rhizome product sinom mixture orange thin and honey show level different preferences in the assessment of taste, aroma, color and also texture product. Likeability level panelist towards the highest sense found in sinom mixture orange thin and honey are used rhizome turmeric, turmeric white, temu black, and meeting joke (SxRx), reason panelist is various united rhizomes give a taste that is not feel bitter and also bitter so that more comfortable for drunk (Riaz et al., 2022).

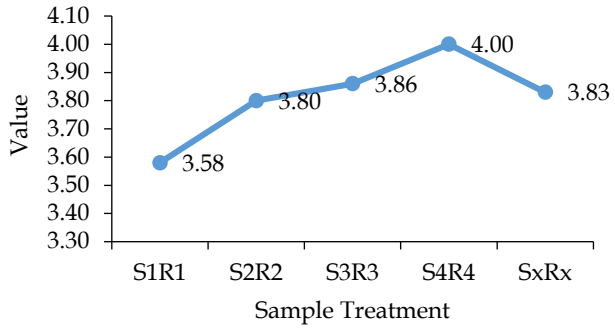

Figure 3. Average preference value panelists in organoleptic tests

Aroma treatment S1R1 (sinom with rhizome turmeric), S2R2 (sinom with rhizome turmeric white), S3R3 (sinom with rhizome meeting black), different real One The same others, as well as S4R4 (sinom with rhizome meeting joke) with SxRx (sinom with rhizome turmeric, turmeric white, temu black and ginger (Ohuoba, 2022).

Color is sensory the first one that can be seen directly by the panelists. Determination quality material food generally depending on the color it has, the color it doesn't have deviate from the color it should be will give impression evaluation individually by the panelists. According to Hannaford et al. (2021) color own role important in reception food, besides That color is also used as indicator Good whether or not method mixing or method marked processing with existence uniform and even color. Average preference value panelist to color sinom in Figure 3 (Adegunwa et al., 2024).

Average score results hedonic against serum sinom various rhizome mixture orange thin and honey range between 3.58–4.20 with mark neutral-like. Score highest obtained by the sample with S4R4 treatment, allegedly the color that comes from ginger No too yellow and not experiencing browning when processing, things This caused by existing content in the ginger very different with rhizomes others. Nature chemistry interesting curcumin is characteristic change color consequence changes in environmental pH. Curcumin colored yellow

or yellow orange in the atmosphere acid, whereas in atmosphere language colored red, thing This Because the presence of polyphenol pigments with demethoxycurcumin and bisdemethoxycurcumin (Akther et al., 2023).

S1R1 treatment sense (sinom with rhizome turmeric) is different real with S2R2 treatment (sinom with rhizome turmeric white), and S3R3 (sinom with rhizome meeting ireng), panelist give score highest in the sense of SxRx (sinom given turmeric, turmeric white, temu black and ginger), things This because of the bitter and sour taste from various rhizome rather reduce If made and drunk simultaneously. It would be very bitter and bitter If made separated Where turmeric gives a slightly different taste bitter, turmeric white very bitter so also meeting black, and ginger. Besides That dose each rhizome If merged Far more A little compared to in condition stand Alone (Akther et al., 2023).

Organoleptic tests by Adegunwa et al. (2024) show respondents ' preferences to formulas containing ginger (500g), root reeds (200 g), galangal (100 g) and sugar ant sugar palm (200 g). Screening phytochemicals show each component (ginger, galangal, alang-alang, sugar ants and the formula created) is positive contain flavonoids and alkaloids. Only positive ginger contain tannins, all component negative contains steroids/triterpenoids and only positive galangal contains saponins (Priya, 2023).

Texture S1R1, S2R2, SxRx treatment different real with S3R3 and S4R4 treatment, things This very influenced by content fiber rhizome, Paz et al. (2003) if content fiber the more low so will feel drinks made the more soft, Table 5.1 shows that S2R2 dominates level highest number sinom serum texture mixture orange thin and honey, meaning the more tall the more give sensation texture very liked by the panelists, This due to because possibility more strong feel authentic that serum drink Alone (Simon et al., 2024b).

Conclusion

The conclusions obtained from study This that average highest water content is in the treatment sinom with use rhizome turmeric, turmeric white, meet black and also meeting comedy (76.617%); level ash on sinom who uses turmeric white (0.831%), the highest protein content in sinom mixture with use various rhizome (0.885%), highest pH found in the sinom that uses it rhizome turmeric (3.995).

Acknowledgement
Thank you to Dhyana Pura University for providing motivation and support in conducting this study, leading to its publication. Hopefully, the results of this study will be beneficial to both the academic community and the general public.

Author Contributions
All authors in this article contributed to the process of completing the research. K.W. collecting initial research data, processing data, and writing draft of article. I.M.Y.P. directing research flow, validating data collection instruments, methodology, and reviewing article. All authors have read and agreed to the published version of the manuscript.

Funding
Thanks also to Dhyana Pura University and the Institute for Research and Community Service for facilitating this study with grant funding, supporting its completion. May God bless this effort.

Conflict of Interest
All author declares that there is no conflict of interest.

References

Abel, E. S., Evivie, E. R., & Chigbufue, O. T. (2023). Evaluating The Proximate Chemical Composition and Sensory Properties of Composite Bread from Wheat and Cocoyam Flours. *African Journal of Food Science*, *17*(5), 74–84. https://doi.org/10.5897/AJFS2022.2197

Adegunwa, M. O., Ogungbesan, B. O., Adekoya, O. A., Akinloye, E. E., Idowu, O. D., & Alamu, O. E. (2024). Production and Characterization of Snacks Utilizing Composite Flour from Unripe Plantain (Musa Paradisiaca), Breadfruit (Artocarpus Altilis), and Cinnamon (Cinnamomum Venum). *Foods*, *13*(6), 852. https://doi.org/10.3390/foods13060852

Akther, F., Alim, M. A., Nasrin, N. A., Khan, M., Gomes, D. N., Suhan, M., Islam, M., & Begum, R. (2023). Effects of Different Drying Methods on The Proximate Composition, Antioxidant Activity, and Phytochemical Content of Hibiscus Sabdariffa L. Calyx. *Food Chemistry Advances*, *3*, 100553. https://doi.org/10.1016/j.focha.2023.100553

Alipin, K., Pribadi, T. D. K., & Setiawati, T. (2022). Edukasi Pengetahuan Tentang Pemanfaatan Tumbuhan Obat pada Masyarakat di Berbagai Lokasi Kediaman Mahasiswa KKN Integratif Unpad. *Dharmakarya: Jurnal Aplikasi Ipteks untuk Masyarakat*, *11*(4), 407-413. https://doi.org/10.24198/dharmakarya.vol11i4.38539

Amellita, A., Asmarahman, C., Indriyanto, I., & Bintoro, A. (2023). Jenis Tumbuhan Obat dan Pemanfaatannya oleh Masyarakat Desa Bumi Agung Wates Kabupaten Way Kanan, Lampung. *Jurnal Hutan Tropis*, *11*(4), 463. https://doi.org/10.20527/jht.v11i4.18195

Carroll, A. S., & Simon, N. G. (2020). Current and Future Applications of Ultrasound Imaging in Peripheral Nerve Disorders. *World Journal of Radiology*, *12*(6), 101-129. https://doi.org/10.4329/wjr.v12.i6.101

Das, S. S. (2022). *Analysis of Beta Carotene & Proximate Composition of Carrot (Daucus Carota) Fortified Bread* (Thesis). Chittagong Veterinary And Animal Sciences University Chittagong–4225, Bangladesh. Retrieved from http://dspace.cvasu.ac.bd/jspui/handle/123456789/1946

Djoufack, M. M. T., Kouam, E. B., Foko, E. M. K., Anoumaa, M., Kaktcham, P. M., & Zambou, F. N. (2023). Sensory Quality and Nutritional Composition of Carrot (Daucus Carota L.) Genotypes as Affected by Fertilization in Production System in Cameroon. *CABI Agriculture and Bioscience*, *4*, 22. https://doi.org/10.1186/s43170-023-00166-2

Drapal, M., Boeck, B. D., Kreuze, H. L., Bonierbale, M., & Fraser, P. D. (2023). Identification of Metabolites Associated with Boiled Potato Sensory Attributes in Freshly Harvested and Stored Potatoes. *Journal of Food Composition and Analysis*, *115*, 104934. https://doi.org/10.1016/j.jfca.2022.104934

Hannaford, A., Vucic, S., Kiernan, M. C., & Simon, N. G. (2021). Review Article "Spotlight on Ultrasonography in The Diagnosis of Peripheral Nerve Disease: The Evidence to Date". *International Journal of General Medicine*, *14*, 4579–4604. https://doi.org/10.2147/IJGM.S295851

Islam, M. D. (2022). *Proximate Analysis of Carrot Fortified Bread and Its Organoleptic Study* (Thesis). Chattogram Veterinary & Animal Sciences University. Retrieved from http://dspace.cvasu.ac.bd/jspui/handle/123456789/897

Nabilla, O. P. (2022). *Formulasi dan Uji Aktivitas Antioksidan Sabun Padat Transparan Ekstrak Kulit Jeruk Keprok (Citrus Reticulata)* (Undergraduate Thesis). UIN Raden Intan Lampung. Retrieved from https://repository.radenintan.ac.id/id/eprint/19426

Nijabat, A., Bibi, S., Ajmal, M., Nawaz, S., Sajid, M. Z., Leghari, S. U. K., Mahmood-Ur-Rehman, M., Naveed, N. H., Ali, A., & Simon, P. W. (2024). Proximate Composition and Prevalence and Exposure Assessment of Aflatoxins Intake Through Consumption of Fresh Carrot and Processed Marketed Carrot Products in South Punjab, Pakistan. *Natural Product Research*, *38*(21), 3743–3752. https://doi.org/10.1080/14786419.2023.2261611

Niu, J., Zhang, L., Hu, N., Cui, L., & Liu, M. (2024). The Distribution Pattern of Nerve Enlargement in Clinical Subtypes of Chronic Inflammatory Demyelinating Polyneuropathy. *Journal of Neuroimaging*, *34*(1), 127–137. https://doi.org/10.1111/jon.13162

Ohuoba, A. N. (2022). Yield & Proximate Properties of Sweet Potato Food Stabilizer as Influenced by Method of Drying and Flour Source. *Journal of Nutrition and Food Science*, *3*(2), 1–6. Retrieved from https://unisciencepub.com/abstract/yield-and-proximate-properties-of-sweetpotato-food-stabilizer-as-influenced-by-method-of-drying-and-flour-source/

Olaifa, R. O., Sogunle, O. M., Odutayo, O. J., Obasa, A. O., & Oyeleke, M. A. (2020). Proximate Composition, Phytochemical Analysis and Healthpromoting Benefits of Some Commonly Consumed Indigenous Meat Spices in Nigeria. *Annals: Food Science & Technology*, *21*(1). Retrieved from https://afst.valahia.ro/wp-content/uploads/2022/09/IV.2_Olugbemi.pdf

Osunrinade, O. A., Phillips, A. A., & Alabi, A. O. (2023). Physical Properties, Proximate Composition and Sensory Acceptability of Gluten-Free Cookies from Sweet Potato Using Shea Butter as Shortening. *Acta Periodica Technologica*, *54*, 165–175. https://doi.org/10.2298/APT2354165O

Paz, M. D. P., Kuehny, J., McClure, G., & Criley, R. (2003). Effects of Rhizome Storage Time and Temperature on Growth and Carbohydrate Content of Ornamental Ginger. *Acta Horticulturae*, *624*(624), 103-109. https://doi.org/10.17660/ActaHortic.2003.624.13

Pratiwi, P., Valentina, A., Saparuddin, S., Ernawati, E., Mgb, A. F., Nurjanah, N., Fitri, N., Akila, N., & Maretik, M. (2024). Identification of Plants with Medicinal Efficacy Based on Local Knowledge of The Community of Rano Jaya Village, Toari District, Kolaka District. *Biopedagogia*, *6*(2), 132–150. https://doi.org/10.35334/biopedagogia.v6i2.5912

Priya, N. J. (2023). *Substitution of Sugar with Different Sweetener in Gel Pudding (Carrot and Coconut Milk): A Comparative Study* (Thesis). Chattogram Veterinary & Animal Sciences University, Khulshi, Chattogram. Retrieved from http://dspace.cvasu.ac.bd/jspui/handle/123456789/2508

Riaz, N., Yousaf, Z., Yasmin, Z., Munawar, M., Younas, A., Rashid, M., Aftab, A., Shamsheer, B., Yasin, H., Najeebullah, M., & Simon, P. W. (2022). Development of Carrot Nutraceutical Products as An Alternative Supplement for The Prevention of Nutritional Diseases. *Frontiers in Nutrition*, *8*, 787351. https://doi.org/10.3389/fnut.2021.787351

Rubiyanto, D., Wicaksono, W. P., Musawwa, M. M., Fitri, N., Yulirohyami, S. S., Isnaini, N., Md, A., Wijaya, S. T. P. A. R., Tohari, S. S., & Dimas, A. S. M. (2023). *Pengembangan UMKM Berbasis Minyak Atsiri dan Bahan Alam*. Deepublish.

Saed, B., El-Waseif, M., Fahmy, H., Shaaban, H., Ali, H., Elkhadragy, M., Yehia, H., & Farouk, A. (2022). Physicochemical and Sensory Characteristics of Instant Mushroom Soup Enriched with Jerusalem Artichoke and Cauliflower. *Foods*, *11*(20), 3260. https://doi.org/10.3390/foods11203260

Sholihah, M. N. (2023). *Lotio Anti Jerawat Kombinasi Infusa Belimbing Wuluh dan Daun Sirih Hijau Terhadap Bakteri Atcc Propionibacterium Acnes dengan Metode In Vivo* (Undergraduate Thesis). Stikes Karya Putra Bangsa Tulungagung. Retrieved from http://repository.stikes-kartrasa.ac.id/id/eprint/180

Simon, C., Delestree, N., Montes, J., Gerstner, F., Carranza, E., Sowoidnich, L., Buettner, J., Pagiazitis, J., Prat-Ortega, G., Ensel, S., Donadio, S., Garcia, J., Kratimenos, P., Chung, W., Sumner, C., Weimer, L., Pirondini, E., Capogrosso, M., Pellizzoni, L., Vivo, D. C. D., & Mentis, G. (2024a). Dysfunction of Proprioceptive Sensory Synapses Is A Pathogenic Event and Therapeutic Target in Mice and Humans with Spinal Muscular Atrophy. In *Medrxiv* (Bll 2006–2024). Cold Spring Harbor Laboratory Press. https://doi.org/10.1101/2024.06.03.24308132

Simon, E. M., Mburu, M. W., & Koskei, R. K. (2024b). The Impact of Varying Stages of Maturity on The Chemical Composition and Antioxidant Activity of Yacon (Smallanthus Sonchifolius) Leafy Vegetable. *European Journal of Agriculture and Food Sciences*, *6*(3), 1–7. https://doi.org/10.24018/ejfood.2024.6.3.782

Suciyati, A., & Retnaningati, D. (2024). Kajian Etnobotani Tanaman Obat di Pasar Dayak Kalimantan Utara. *Borneo Journal of Biology Education (BJBE)*, *6*(1), 45–54. https://doi.org/10.35334/bjbe.v6i1.5450

Sulistyaningsih, T., Harjunowibowo, D., Wulandari, R., Ulfana, A. R., Putri, I. R., Rahmawati, A. W., & Rindiani, F. A. (2023). *Tanaman Herbal (Jahe, Katuk)*. Penerbit Tahta Media. Retrieved from https://tahtamedia.co.id/index.php/issj/article/view/107

Sundari, E., Harisanti, B. M., & Nurhidayati, S. (2022). Identifikasi Tumbuhan Obat Tradisional Berbasis Kearifan Lokal di Desa Ranggagata Kecamatan Praya Barat Daya Kabupaten Lombok Tengah. *Bioscientist: Jurnal Ilmiah Biologi*, *10*(2), 785. https://doi.org/10.33394/bioscientist.v10i2.5461

Zhang, J., Zhang, M., Bhandari, B., & Wang, M. (2024). Basic Sensory Properties of Essential Oils from Aromatic Plants and Their Applications: A Critical Review. *Critical Reviews in Food Science and Nutrition*, *64*(20), 6990–7003. https://doi.org/10.1080/10408398.2023.2177611