

Community empowerment through training on healthy carrot-based brownies

Tri Addya Karini*¹, Nur Hasanah Arfah², Ridhayanti³, Muhammad Sudarsin⁴

^{1, 2, 3, 4} Department of Public Health, Universitas Islam Negeri Alauddin, Makassar, Indonesia

Correspondence: tri.addya.ki@mail.uin.ac.id

Submit: 13 February 2024

In Review: 15 February 2024

Publish Online: 20 February 2024

ABSTRACT

Carrots are the main vegetable and are very loved because of their fresh and sweet taste and very diverse content. The efficacy of carrots that have been studied with this content is that it can help reduce high blood pressure. The purpose of this dedication is to conduct training in making healthy carrot-based brownies. The method used in this training is a direct practice method. Based on the results of data collection on the number of participants who participated in the training, which was as many as 30 respondents and the concept carried out was to make a video of the process of making carrot-based brownies and then broadcast using LCD, then given posters about the steps to make brownies, and practice directly at residents' homes. Based on the results of this study, it can be concluded that the quality of brownies with carrot mixture is quite satisfactory in terms of colour, taste, aroma, and texture. The people of Bontolebang Hamlet, Kanreapia Village were very enthusiastic when we conducted training and practice in making carrot-based brownies

Keywords : brownies; daucus carota; hypertension; vegetables; carrots

ABSTRAK

Wortel menjadi sayuran utama dan sangat disukai karena rasanya yang segar dan manis serta kandungannya yang sangat beragam. Khasiat wortel yang telah diteliti dengan kandungan tersebut yaitu dapat membantu menurunkan tekanan darah tinggi. Tujuan pengabdian ini adalah untuk melakukan pelatihan pembuatan brownies sehat berbahan dasar wortel. Metode yang digunakan pada pelatihan ini adalah metode praktek secara langsung. Berdasarkan hasil pendataan jumlah peserta yang mengikuti pelatihan yaitu sebanyak 30 responden dan konsep yang dilakukan yaitu membuat video proses pembuatan brownies berbahan dasar wortel lalu ditayangkan menggunakan LCD, kemudian diberikan poster tentang langkah pembuatan brownies, dan melakukan praktik secara langsung di rumah warga. Berdasarkan hasil penelitian ini dapat disimpulkan bahwa kualitas brownies dengan campuran wortel cukup memuaskan dari segi warna, rasa, aroma, dan tekstur. Masyarakat Dusun Bontolebang, Desa Kanreapia sangat antusias pada saat kami melakukan pelatihan dan praktik pembuatan brownies berbahan dasar wortel.

Kata Kunci: brownies; daucus carota; hipertensi; sayuran; wortel

INTRODUCTION

The condition of Indonesia's very fertile soil makes our country an agricultural country. Various vegetables, fruits thrive in Indonesia (Laela et al., 2022). One of the vegetable producing areas in South Sulawesi is Malino. In this high area in Gowa Regency, various kinds of vegetables can be found that thrive. Carrots are one type of vegetable that is widely grown in Malino. Carrots were originally only used as medicine, but over time now carrots have become the main vegetable and are very preferred because of their fresh and sweet taste and very diverse content (Que et al., 2019). One of the important ingredients in carrots is minerals, such as calcium and phosphorus, not only that carrot also contains pectin (Yusuf et al., 2021). Pectin contained by carrots is very good for lowering blood cholesterol (Bidura et al., 2021). Its high fibre content is also very useful for preventing constipation (Ikram et al., 2024).

The results of Basic Health Research (Rikesdas) in 2007 showed that the majority of high blood diseases in Indonesia were not detected. At the age of 18 years and over, the incidence of high blood pressure is 31.7%, while only 7.2% of people know they have it. This shows that about 76% of high blood disease in the community is undiagnosed or 76% of people do not know they have high blood disease.

Carrots are rich in nutrients and are believed to be able to overcome hypertension problems (Riaz et al., 2022; Silalahi et al., 2020). With its very diverse properties, unfortunately so far carrots have not been used optimally. New carrots are used in processed vegetables such as soup, stir-fry, and cap cay. Therefore, it is very important to make efforts by making various alternative processed carrots to be able to increase carrot consumption in the community, one of which is by processing carrots into delicious snacks that are liked by all ages, which are processed into brownies. The processing of carrots into brownies is considered very suitable, because of its easy manufacture so that it is expected that the community can produce it sustainably which is very in line with the principle of community empowerment, which is sustainable.

Brownies are one of the cakes that are very popular and popular in the community. The texture of brownies is dense and has a dense chocolate dominant flavor. Brownies can be processed by baking, so brownies have a dry texture on the surface and wet on the inside. The temperature used to bake brownies ranges from 170 – 180 degrees Celsius with a time of approximately 30 – 45 minutes. In addition to baking, brownies can also be processed by steaming. Steamed brownies have a softer, wetter, and porous texture, this is because the water that evaporates during steaming is absorbed by the brownies. The time used for steaming is about 25 minutes (Yeni, 2010).

The people of Bontolebang Hamlet, Kanreapia Village in Gowa Regency are mostly characterized as vegetable farmers. From the observations, one type of incision that is widely produced in this area is carrots. This service aims to provide training to the community for making healthy carrot-based brownies.

METHODS

This training uses a hands-on method. The implementation of training is divided into 2 stages, namely the preparation stage and then the implementation stage. This training aims to provide brownie making skills by utilizing carrots that are found in Malino as an additional ingredient in making brownies that are efficacious to prevent hypertension. The expected

final result is that brownies processed with carrot mixture have good quality, from the aspects of taste, color, texture, and aroma.

The preparation stage is a series of activities carried out before training in making brownies that are efficacious to prevent hypertension. The activities carried out at the preparatory stage are door to door to the community and coordination with village officials, the head of Bontolebang Hamlet, the head of RT and the head of RK and the management of the Ta'lim assembly of Bontolebang Hamlet. This activity is carried out to get support and inform about the implementation of activities to the community. Next, prepare material on how to make carrot-based brownies.

At the implementation stage, it was carried out at the Bontolebang hamlet mosque. At the implementation stage, several steps are carried out. The first step of counseling was delivered by Field Learning Experience Students (PBL) of Public Health UIN Alauddin Makassar, the chosen media was a video of the process of making carrot-based brownies and then displayed in the community and practiced directly at residents' homes. Figure 1 shows the screening process of how to make carrot-based brownies. The tools used in this training are laptops, speakers and LCDs to display material. The use of laptops, speakers and LCDs is used to help counseling participants understand the material.

The second step is to show how to make carrot-based brownies. After the counseling, it was continued by showing videos and distributing posters on how to make brownies to the training participants. With this, people are expected to be able to utilize existing assets to prevent hypertension because carrots contain potassium can help maintain blood pressure balance.

The last step is to train some residents for brownie making. Brownie making training is carried out during counseling and at residents' homes. This is so that the community can practice directly the process of making carrot-based brownies that have been explained using video media. Figure 2 shows the process of distributing brochures.



Figure 1. Hypertension Counseling

RESULTS AND DISCUSSION

Figure 3 shows a training on making carrot-based brownies held on Sunday, October 8, 2023 in the courtyard of the Subulussalam Mosque at 16.00-17.30 WITA. The number of participants who participated in this counseling was 24 people plus 6 door to door counseling participants. The people who attended were enthusiastic when we conducted training on making carrot-based brownies. The target of this program is the community of Bontolebang hamlet, Kanreapia Village.



Figure 2. Brochure Distribution

The concept of Training on Making Carrot-Based Brownies is to show videos of making carrot-based brownies through LCD and distribution of posters to each respondent who attended the counseling place. After the training, then went to residents' homes to practice directly making brownies to see the skills of respondents before and after the training.

The tools and materials and procedures for making carrot-based brownies are Tools: Small basin / bowl, Mixer, Pan, Tablespoon, Large spoon, Knife, Grated cheese, Oven / panic steamer. Ingredients: 2 eggs, 5 tbsp sugar, 1 tbsp, 1 cup wheat flour, 1 tbsp cornstarch, 2 carrots, 7 tbsp melted butter, 1 packet milk powder.



Figure 3. Brownie Making Process

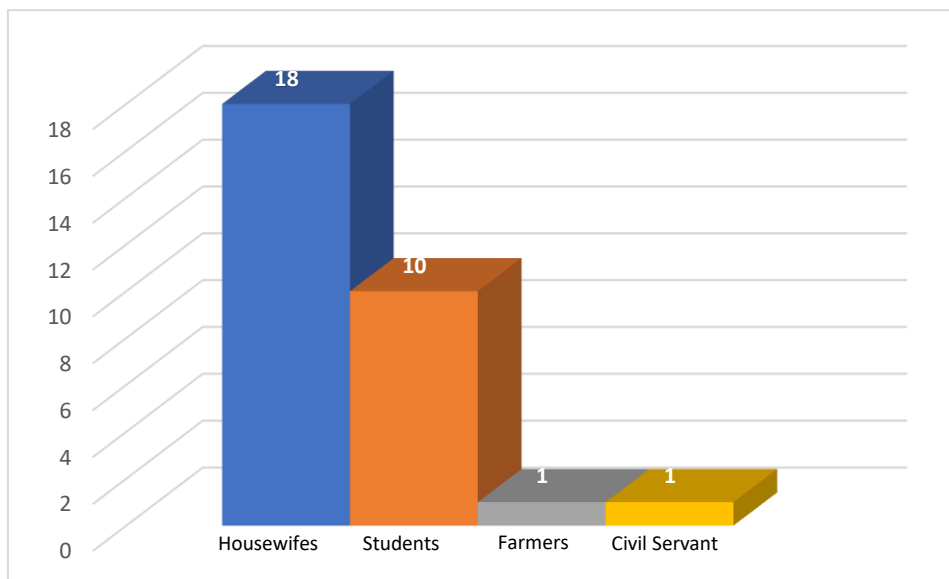


Figure 4. Distribution Chart of Respondents by Occupation

In the manufacture of brownies we must preserve the color, appearance, testicles, aroma, taste. Attractive food colors can help increase appetite. It can be concluded that color is one of the important components in the food quality indicator of processed brownie ingredients created. Food should be interesting to see while on the plate, because it is one of the important factors. The freshness and cleanliness of the food served is very important to note because it can affect the appearance of food, whether or not to be enjoyed it can be concluded that appearance is the first thing that gives the impression of whether brownies are of quality or not.

The texture of food is very diverse, including smooth or not, liquid or not, hard or moist. The thin and smooth level and shape of food can be felt through the pressure and movement of receptors in the mouth. Texture / composition explains how to arrange a complete dish, while *form* / shape is the slice / shape of the food served. It can be concluded that texture is the composition or character of a food. The food served must also have a pleasant aroma so that it increases appetite. The aroma that comes out of food is the result of the food cooking process, which can provide stimulation to consumers to enjoy the food. Although taste is relative, food with good taste can be an important element in food quality. It can be concluded that the definition of taste is what gives the impression to consumers that this food is worth enjoying.

Based on Figure 4, it shows the distribution of respondents given counseling in Bontolebang Hamlet, Kanreapia Village according to the most jobs, namely work as IRT (Housewives) with a total of 18 respondents (59.4%).

Based on Figure 5 showing the distribution of respondents by sex in iodized salt extension, there were 30 respondents (100%). Female respondents were 29 respondents (96.57%), while men were 1 respondent (3.43%).

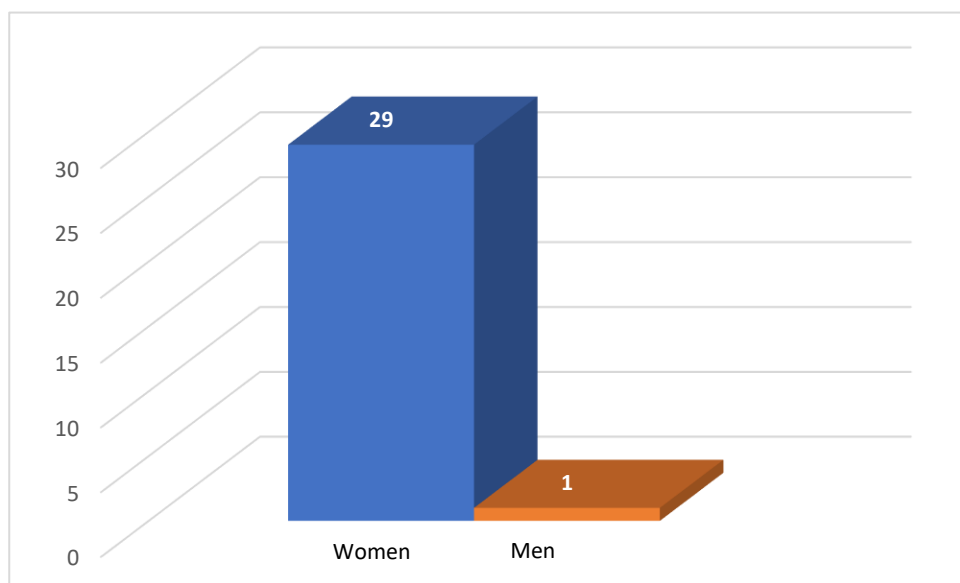


Figure 5. Distribution chart of Respondents By Gender

Carrots contain many essential nutrients such as protein, carbohydrates, fat, fiber, betacarotene (provitamin A), vit, B VIT. C, glutathione, contains minerals namely Ca, Mg, Fe, P, S and Cl (Dezordi et al., 2016). The efficacy of carrots with various ingredients is that it can help reduce high cholesterol, prevent pancreatic cancer, lung cancer, and hepatitis (Ahmad et al., 2019; Rasheed et al., 2022; Varshney, & Mishra, 2022). Not only that, carrots can also be efficacious for tightening the skin, preventing stroke and lowering high blood pressure (Ahmad et al., 2019; Herath et al., 2021). The results of Laela's study (2019) show that carrots become juz very useful to reduce hypertension in the elderly. Similarly, a study conducted by Umaila et al. (2023) by modifying carrots into pudding for a week was able to reduce systolic blood pressure clinically by -2.25 mmHg and diastolic by -1.5 mmH.

The important and high mineral content contained in carrots that can function to maintain water balance in the body and help lower blood pressure is potassium (Ca) (Singh et al., 2022). Not only lowering blood pressure, potassium can maintain water balance in the body, launch urine production, dissolve stones in the urinary tract, bladder and kidneys, because carrots can function as a powerful diuretic. And potassium can also play a role in neutralizing acid in the blood (Wijaya et al., 2018)

Potassium contained in carrots can lower blood pressure by causing vasodilation which then causes a decrease in total peripheral retention and then increases cardiac output. Consumption of a lot of potassium will increase its concentration in the intracellular, so it tends to draw fluid from the extracellular part and lower blood pressure (Putra & Soebyakto, 2024). Potassium in carrots can reduce renin secretion which causes a decrease in angiotensin II causing reduced vascular vasoconstriction and decreased aldosterone so that sodium and water reabsorption into the blood is reduced. Potassium also has an effect in the Na-K pump, where potassium is pumped from extracellular fluid into cells, and sodium is pumped out, so that potassium can lower blood pressure (Yuningsih et al., 2022).

CONCLUSIONS

This training was conducted to develop brownie cake products by utilizing carrot vegetables as an additional ingredient in making brownies that are useful for preventing hypertension, based on the results of data collection on the number of participants who participated in counselling as many as 30 respondents and the concept carried out was to make a video of the process of making carrot-based brownies and then broadcast via LCD. Then followed by distributing posters to respondents who were present at the training site and doing practice directly at residents' homes.

Based on the results of this training, it can be concluded that the quality of brownies with carrot mixture is quite satisfactory in terms of colour, taste, aroma, and texture. And the people in Bontolebang hamlet, Kanreapia village were very enthusiastic when we conducted training and practice in making carrot-based brownies. This dedication recommends to the community to be able to modify foods to be attractive in order to increase their nutritional value, such as healthy brownies from carrots.

REFERENCES

- Ahmad, T., Cawood, M., Iqbal, Q., Ariño, A., Batool, A., Tariq, R. M. S., & Akhtar, S. (2019). Phytochemicals in *Daucus carota* and their health benefits. *Foods*, 8(9), 424.
- Bidura, I. G. N. G., Siti, N. W., Wibawa, A. A. P. P., Ariana, I. N. T., & Puspani, E. (2021). The effect of Carot leaves meal fermented in diets on egg production, yolk cholesterol and beta-carotene in yolk of hens. *Annals of the Romanian Society for Cell Biology*, 25(6), 18705-18711.
- Dezordi, L. R., Aquino, L. A. D., Aquino, R. F. B. D. A., Clemente, J. M., & Assunção, N. S. (2016). Diagnostic methods to assess the nutritional status of the carrot crop. *Revista Brasileira de Ciência do Solo*, 40.
- Herath, T. D., Paturi, G., Butts, C. A., Sansom, C. E., & Morgenstern, M. P. (2021). In vitro and in vivo effects of carrot on human blood platelet aggregation. *International Journal of Food Science & Technology*, 56(4), 1829-1836.
- Ikram, A., Rasheed, A., Ahmad Khan, A., Khan, R., Ahmad, M., Bashir, R., & Hassan Mohamed, M. (2024). Exploring the health benefits and utility of carrots and carrot pomace: a systematic review. *International Journal of Food Properties*, 27(1), 180-193.
- Laela, N., Astuti, A. P., & Maharani, E. T. W. (2022). Analisis Pengaruh Penambahan Eco-Enzyme Limbah Kubis Terhadap Pengawetan Buah Tomat Dengan Perbandingan Variasi Substrat. *Hydrogen: Jurnal Kependidikan Kimia*, 10(2), 122-131.
- Laila, W., Nurhamidah, N., & Santika, L. (2019, December). Pengaruh Pemberian Jus Wortel Terhadap Penurunan Tekanan Darah Pada Penderita Hipertensi Derajat 1 Lansia Umur 50-70 Tahun di Wilayah Kerja Puskesmas Tapus Kabupaten Pasaman Timur. In *Prosiding Seminar Kesehatan Perintis* (Vol. 2, No. 1, pp. 129-129).
- Putra, R. S., & Soebyakto, D. H. (2024). Manajemen Edukasi Penanganan Hipertensi Pada Lansia Dengan Jus Wortel. *Journal of Cross Knowledge*, 2(1), 244-249.
- Que, F., Hou, X. L., Wang, G. L., Xu, Z. S., Tan, G. F., Li, T., & Xiong, A. S. (2019). Advances in research on the carrot, an important root vegetable in the Apiaceae family. *Horticulture research*, 6.
- Rasheed, H., Shehzad, M., Rabail, R., Kowalczewski, P. Ł., Kidoń, M., Jeżowski, P., & Aadil, R. M. (2022). Delving into the nutraceutical benefits of purple carrot against metabolic syndrome and cancer: A review. *Applied Sciences*, 12(6), 3170.

- Riaz, N., Yousaf, Z., Yasmin, Z., Munawar, M., Younas, A., Rashid, 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.
- Silalahi, N., Marlina, S., Insani, S. D., & Frengki, H. (2020). Comparison Efficiency of Consuming Sweet Star Fruit Juice, Carrot Juice and Cucumber Juice against Patients with Hypertension Analyzed with Kruskal Wallis.
- Singh, M. N., Srivastava, R., & Yadav, I. (2021). Study of different varieties of carrot and its benefits for human health: a review. *Journal of Pharmacognosy and Phytochemistry, 10*(1), 1293-1299.
- Umalla, L., Larasati, M. D., & Ambarwati, R. (2023). Pengaruh Pemberian Puding Wortel dan Mentimun Terhadap Penurunan Tekanan Darah pada Prehipertensi. *JURNAL RISET GIZI, 11*(1), 18-26.
- Varshney, K., & Mishra, K. (2022). An analysis of health benefits of carrot. *International Journal of Innovative Research in Engineering & Management (IJIREM), 9*, 211-214.
- Wijaya, I. P. A., Susila, I. M. D. P., & Dita, I. G. A. W. P. (2018). Pengaruh Kombinasi Jus Wordu terhadap Penurunan Tekanan Darah pada Lansia dengan Hipertensi. *Journal Center of Research Publication in Midwifery and Nursing, 2*(2), 58-62.
- Yuningsih, D., Enawati, S., Astuti, A. P., Hafiddudin, M., & Sarifah, S. (2022). Pengaruh Pemberian Jus Wortel Terhadap Perubahan Tekanan Darah Pada Penderita Hipertensi. *Jurnal Kesehatan dan Kedokteran, 1*(2), 75-80.
- Yusuf, E., Tkacz, K., Turkiewicz, I. P., Wojdyło, A., & Nowicka, P. (2021). Analysis of chemical compounds' content in different varieties of carrots, including qualification and quantification of sugars, organic acids, minerals, and bioactive compounds by UPLC. *European Food Research and Technology, 247*, 3053-3062.