

# Introduction of Fish and Celery Broth to Prevent Hypertension (DURASI) as an Alternative to Salt in Karangrejo Community, Banyuwangi

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**Abstract** Hypertension is one of the non-communicable diseases (PTM) which is the main cause of death in society which is a global problem. Hypertension can occur anytime and anywhere without complaints, so this disease is called a silent killer or silently deadly. One can start to controlling their hypertension by increasing their knowledge and self-awareness as well as adopting a healthy lifestyle. One way is limiting the consumption of salt according to WHO recommendations, which is 2,400 mg/day or the equivalent of one teaspoon. Public Health students from the Faculty of Health and Natural Sciences (FIKKIA) of Universitas Airlangga created DURASI products as an alternative to salt to control hypertension. DURASI stands for fish and celery broth to prevent hypertension. Fish is rich in omega 3 which can lower blood pressure and celery has hexane extract which plays a role in lowering blood pressure as well as methanol and ethanol extract which can increase blood pressure circulation. At the Kertosari Health Center in 2021 hypertension ranks 1<sup>st</sup> out of the top 10 diseases in the working area of the Kertosari Health Center, including Kerosari Village and Karangrejo Village. In suppressing hypertension cases in the Karangrejo Village, community service activities were carried out by introducing DURASI products as an alternative to salt to the Integrated Development Post (Posbindu) cadres as pioneers of healthy living to prevent hypertension. The DURASI product introduction method is carried out for Posbindu cadres by means of an approach including counseling, training and mentoring. Laboratory test results obtained sodium content of 550 mg/100 gram DURASI. The result of increasing public knowledge in the first measurement was an average increase of 50% and in the second measurement there was an average increase of 7%. The factor that affected the small number of increasing public understanding was the awareness of using DURASI products at home.

## 1. INTRODUCTION

Hypertension is one of the non-communicable diseases (PTM) which is the main cause of death in society, and it is a global problem (Jabani et al., 2021). In 2025 WHO estimates that 1.6 billion or around 29% of the world's population will suffer from hypertension, meaning that 1 out of 3 people in the world can suffer from hypertension (Fakhriyah et al., 2021). Based on data from the East Java Provincial Health Office in 2021, the achievement of health services for people with hypertension in East Java is 35.60%

(Dinkes Jatim, 2021).

High blood pressure or hypertension is a condition where the blood pressure in the arteries exceeds normal limits, which is characterized by systolic blood pressure  $\geq 140$  mmHg and/or diastolic blood pressure  $\geq 90$  mmHg.

Hypertension can strike anytime and anywhere without any complaints, so this disease is called the silent killer or silently kills (Kemenkes RI, 2019). Therefore, early detection is needed with routine blood pressure checks as

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a preventive measure. Hypertension risk factors include uncontrollable and controllable risks. Risks that cannot be controlled are age, gender and genetics, and also risks that can be controlled are obesity, smoking habits, excessive salt consumption, high-fat diets, dyslipidemia, and stress (Kemenkes RI, 2019). Therefore, controlling hypertension can be started by increasing people's knowledge and self-awareness in adopting a healthy lifestyle (Suprayitno & Huzaimah, 2020).

Implementing a healthy lifestyle by maintaining a healthy diet to prevent hypertension, one of which is by consuming salt according to WHO recommendations, which is 2,400 mg/day or the equivalent of 1 teaspoon. Therefore, FIKKIA Public Health students at Airlangga University created the DURASI product as an alternative to salt to control hypertension. DURASI stands for fish and celery broth to prevent hypertension.

Fish and celery are used as the main mixed components in making broth. Fish is rich in Omega-3 which can lower blood pressure. Natural Omega-3 is found to be younger in types of marine fish, while in freshwater fish, the Omega-3 contained comes from fish feed fortified with Omega-3 (Andhikawati et al., 2021). Celery has hexane extract which plays a role in lowering blood pressure and the content of methanol and ethanol extract can increase blood pressure circulation. In a special type of celery, namely Japanese celery, it has an antioxidant effect that exceeds that of soybeans, grapes and green tea which can lower blood pressure (Hadiningrat, 2017).

Based on data from the Kertosari Health Center, hypertension ranks the 1st out of the top 10 diseases in the working area of the Kertosari Health Center, including Kerosari Village and Karangrejo Village. Efforts that can be made to suppress hypertension cases in the Karangrejo Village are community service activities by forming hypertension cadres as pioneers of healthy living to prevent hypertension. Therefore the FIKKIA Universitas Airlangga is conducting community service activities in the Karangrejo Sub-District as well as a follow-up effort from the street vendors activities of Public Health students in early 2022 in creating hypertension control products.

## 2. METHOD

DURASI or fish and celery broth to prevent hypertension is a product innovation to reduce hypertension by utilizing fish and celery, especially for the people of Karangrejo Village, Banyuwangi. Therefore a research-based Community Service program was organized by involving DURASI products with the title "Increasing the Knowledge of Diet, Physical Activities, and CERDIK Behavior for Posbindu Cadres with Hypertension". In developing this research, the researchers had received an Ethical Clearance Certificate number 507/HRECC.FODM/VIII/2022 issued by Universitas Airlangga's Ethics Committee of the Faculty of Dentistry.

The effort to introduce DURASI products were made to Posbindu cadres by utilizing cadres that had been formed in Karangrejo Village. The introduction of the DURASI

product was carried out in field work activities (PKL) on February 11, 2022 which was attended by 27 cadres and continued in the community service program on November 26, 2022 which was attended by 23 cadres. The methods used included counseling, training, and mentoring, all of which are explained in the following.

### 2.1 Counseling

Counseling is an activity of conveying messages to individuals or groups with the aim of increasing knowledge and changing behavior for the better (Mamahit et al., 2021). During this session, the introductory activities were oriented towards the main problem, namely hypertension among the community members. This counseling method was implemented through lectures and discussions facilitated by resource persons (experts) who were knowledgeable in the field of hypertension (doctors) and preparing nutritious diet (nutritionists). These lectures were organized in person in an auditorium called AULA Sobo Campus of FIKKIA at Airlangga University.

### 2.2 Training

Training theoretically Bluestone et al. (2013) means an interactive learning process in imparting knowledge and skills. The training in this community service activity was comprised of demonstrations and group practice. The demonstrations of making DURASI were carried out by students. The participant groups were divided based on their domicile areas in Karangrejo Village.

### 2.3 Accompaniment

In an effort to make the outcomes of the counseling and training sustainable, the community service team created a WhatsApp group for target community to facilitate continuous assistance and consultations. The assistance has been provided since the counseling and training ended, and this was a means of guidance and evaluation of both programs (Lusiyana, 2020). With this group, discussions can be held when the community encountered problems in the process of making DURASI independently. The team also tried to motivate the community to stock DURASI as a substitute for salt in their respective homes, especially those with a family history of hypertension.



Figure 1 . DURASI product making process

The DURASI products were made of fish waste, celery, garlic, shallots, leeks, pepper, sugar, and salt Figure 1. To obtain powdered broth, all the ingredients were mashed

together with a small amount of water, and the mixture was then roasted until the water content decreased significantly. After this, it was dried in the sun until it is completely dry, or it can also be roasted until the water content is completely gone, but one has to make sure it does not burn. After the broth became solid, it was then refined again with a smoothing machine to get a powdery texture. Finally, the DURASI product was completed and could be used as cooking stock.

### 3. RESULT AND DISCUSSION

#### 3.1 Laboratory test of DURASI

The DURASI product was subjected to laboratory tests at the Nutrition Laboratory of the Faculty of Public Health of Airlangga University on June 16-23, 2022 with sample number 187/Lab. Nutrition/2022. The laboratory test results were as Table 1.

Table 1 . DURASI product laboratory

Parameter	Results
Total Fat (%)	0.41
Saturated Fat (%)	0.23
Proteins (%)	9.37
Total Sugar (%)	1.75
Sodium (mg/100g)	550

Source : Primary Data

Based on the laboratory test results on Table 2, it can be seen that the DURASI's sodium content is only 550 mg/100 grams. This is significantly different from the sodium content of ordinary salt. The high amount of sodium absorbed into the body causes water retention which can consequently increase blood pressure and volume (Purwono et al., 2020). Therefore, people with a history of hypertension can replace ordinary salt with DURASI products as an effort to reduce or control daily sodium consumption, so that this can help maintain blood pressure stability. The consumption of low-sodium salt substitutes has great potential in reducing high blood pressure (Redjeki et al., 2020).

Table 2 . Comparison of sodium content and recommendations for use

Type	Heavy	Sodium (mg)	Dosage*
Ordinary salt (WHO)	100 gram (7 tbsp)	48,000	5 gram (1 tsp)
DURASI (Lab test)	100 gram (7 tbsp)	550	436 gram (30.5 tbsp)

\*Maximum use dosage per day (2,400 mg/day)

When compared with WHO recommendations in consuming sodium every day, which is as much as 2400 sodium/day or the equivalent of 1 teaspoon, and for people with a history of hypertension it is recommended not to exceed 1500 sodium/day. Therefore, DURASI product can be consumed up to 30.5 tablespoons/day and people with a history of hypertension can consume up to 19 tablespoons/day.

#### 3.2 Community knowledge

Community knowledge regarding hypertension is influenced by the information they receive, so that it can promote understanding that encouraged people to make an effort to control risks and potential of hypertension such as attempting to reduce sodium consumption (Nelwan, 2019). In an effort to prevent hypertension in Karangrejo Village, it was necessary to educate the villagers regarding hypertension and introduce DURASI products as an alternative to salt. The first education was carried out during the Field Work Practice (PKL) program for FIKKIA Public Health students of Airlangga University in January 2022 for 27 Posbindu cadres.

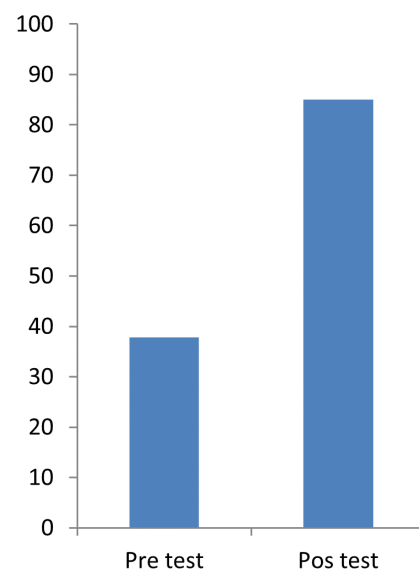


Figure 2 . Graph of pretest & posttest average results in hypertension prevention

Table 3 . Standard deviation

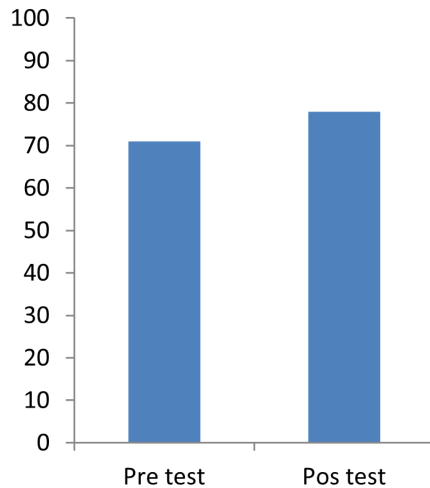
	Standard deviation
Pretest	37.5
Posttest	85

n = 27

Based on the results of the pretest and posttest at student street vendor event Figure 2, at first the people in the Kelurahan only got an average score of 37.5, meaning that the villagers' knowledge regarding hypertension was arguably low. However, after being given education with regard to hypertension and DURASI products, the villagers' knowledge evidently increased by almost 50% with an average posttest score of 85 (Table 3). The results of the pretest and posttest in a study serves as a benchmark and a reflection of the achievement of knowledge and understanding received as well as evaluation material of next program (Donuata, 2019).

In their effort to make this program sustainable, the community service team activity tried to continue this community engagement by monitoring the target community's self-awareness in preventing hypertension. With a duration of 10 months, 23 Posbindu cadres

participated in measuring the understanding or knowledge of the cadres regarding hypertension and DURASI products. An ongoing program is needed to maintain and improve the community's understanding and skills in order to improve their public health status, especially for people with hypertension (Lusiñana, 2020).



**Figure 3.** Graph of pretest & posttest average results in community service for prevention of hypertension

**Table 4.** Standard deviation

	Standard deviation
Pretest	72.5
Posttest	77.5

n = 23

Based on the results of the pretest and posttest administered before and after the follow-up activity of the community service program (Figure 3), the target community's understanding regarding hypertension and DURASI products were arguably sufficient. The results of the pretest show an average value of 71 although there was a decrease in the value of the posttest measurement results 10 months earlier, which was from the average value of 85 to 78 (Table 4).

Therefore, the re-education of the target community and evaluation regarding the use of the DURASI product was carried out from the time it was first introduced until the assessment was carried out again. The posttest results yielded an average score of 78, which means that there was an increase in the community's knowledge and understanding regarding hypertension and DURASI products even though it only increased by 7%. Based on the increased results in the posttest, the counseling and training activities in the previous community service programs can be said to be successful (Astutiatmaja et al., 2022).

Increased public understanding is influenced by internal and external conditions (Magdalena et al., 2021). The factor that affected the minor increase of the target community's understanding in this community service program was the internal factor relating to self-awareness in using DURASI

products at home. This shows the understanding and self-awareness of the target community in their efforts to prevent hypertension in their families. It was found that in the process of making DURASI products the community was very enthusiastic, but it was rather disappointing that they were not interested in making salt substitutes because they were not used to it. Therefore, the use of DURASI must be familiarized and introduced to family members starting from the household kitchen.

## 4. CONCLUSION

The conclusion of the introduction of the DURASI product as an alternative to salt in the Karangrejo Banyuwangi Village community was that the product had been subject to laboratory tests to ensure the level of its nutritional contents, especially sodium. This substance was measured and found to exist in the amount of 550 mg/100 gram of DURASI product. In comparison with ordinary salt, it contains sodium in the amount of as much as 48,000 mg/100 grams. This means DURASI product has 87 times lower sodium content than the ordinary salt. In terms of consumption, the sodium content of 30.5 tablespoons is equivalent to 1 teaspoon of ordinary salt.

The target community's understanding regarding hypertension and DURASI was initially very low, but after the education and assistance there was an increase in this knowledge. The increased target community's understanding was influenced by internal and external conditions. The factor that affected the minor increase of the target community's understanding in this community service program was the internal factor relating to self-awareness in using DURASI products at home.

The participants' enthusiasm in making DURASI was very high, but unfortunately the community did not yet have self-awareness in taking care of their family by using DURASI products as an alternative to salt.

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## CONFLICT OF INTERESTS

All authors declare that there was no conflict of interest in this community service program.

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