

THE EFFECT OF GIVING CASSAVA STARCH (*MANIHOT ESCULENTA*) ON GASTRITIS PAIN

Dewi Woro Astuti, Wayan Novi Sapitri, Atikah Adyas

Nutrition Study Program, Faculty of Health, Universitas Mitra Indonesia, Jl. ZA. Pagar Alam No.7, Gedong Meneng,
Rajabasa, Bandar Lampung, Lampung 40115, Indonesia

*dewiworo@umitra.ac.id

ABSTRACT

Gastritis is an inflammation of the gastric mucosa that can be acute, chronic, diffuse, or local. This condition is generally caused by bacterial infections or medications. Cassava starch contains amylose and amylopectin, two types of viscous polysaccharides that can form a protective layer on the surface of the gastric mucosa, thereby reducing irritation from excessive exposure to stomach acid. Research This aim to determine the effect of administering *manihot esculenta* starch (cassava starch) on reducing gastritis pain. Method used in study This is quantitative with a *quasi-experimental* design, using purposive sampling techniques with sample 3 5 respondents. The data will be collected through observation sheet, and analyzed use method appropriate statistics like paired t test. Results study show the effect of administering *manihot esculenta* starch (cassava starch) on reducing gastritis pain with a p value of $0.000 < 0.05$. Results from study can give reference and additional literature about The effect of administering manihot esculenta starch (cassava starch) on reducing gastritis pain, we hope that administering cassava starch as an alternative medicine can reduce the scale of gastritis pain.

Keyword: gastritis; pain intensity; pati; *manihot esculenta*

INTRODUCTION

Gastritis is the most common digestive tract problem. Gastritis itself is defined as inflammation of the gastric mucosa accompanied by damage or erosion. Gastritis can be acute, coming on suddenly within hours or days, or it can also be chronic, lasting for months or years. Acute gastritis is generally caused by an unhealthy diet and the consumption of foods that irritate the gastric mucosa, which can cause symptoms of epigastric pain, nausea, vomiting, and gastrointestinal discomfort. (Mirawati et al., 2024) According to 2020 World Health Organization (WHO) data, the prevalence of gastritis cases in several countries is quite high, including the UK at 22%, China at 31%, Japan at 14.5%, Canada at 35%, and France at 29.5%. Meanwhile, in Indonesia, the WHO recorded a gastritis incidence of 40.8%. Nationally, gastritis was also found to be quite high, with 274,396 cases out of a total population of approximately 238,452,952 (Sari et al., 2024).

According to data from the Central Statistics Agency (BPS), the number of gastritis cases in Indonesia was 219,232 in 2017. The incidence of gastritis in Lampung in 2021 reached 179,992 cases, or approximately 19.4% of the total number of cases, making gastritis the disease with the second highest number of cases in Lampung province after hypertension (Hermawan, 2023). According to data obtained from *the YANKESDAS* (National Health Service) at the Simpung Community Health Center (Puskesmas) in 2021, gastritis was among the top 10 most frequently treated diseases, ranking fifth. The number of gastritis cases recorded at the Simpung Community Health Center reached 1,860, with a higher proportion of female patients (1,323) compared to male patients (537). In pharmacological treatment, gastritis is typically treated with antacids, proton pump inhibitors, and antibiotics. However, long-term use of these medications can cause side effects, necessitating the need for safe, natural, and readily available alternative therapies.

One natural ingredient that has the potential to help relieve gastritis symptoms is cassava starch (*Manihot esculenta*). Cassava starch is known as a source of complex carbohydrates that are easily digestible and contains resistant starch which is a prebiotic. Resistant starch can increase the production of short-chain fatty acids in the intestine, improve the balance of microbiota, and help strengthen the gastric mucosal layer. Cassava starch is also easy to obtain and has traditionally been used as a food ingredient and natural remedy for indigestion (Mohidin, et al. 2023). In addition, bioactive compounds in cassava starch such as flavonoids and saponins are also reported to have anti-inflammatory effects that can help reduce inflammatory reactions in the stomach.

In traditional medicine, cassava starch is mixed with warm water and palm sugar to enhance flavor and enhance health benefits. Palm sugar (*Arenga pinnata*) contains antioxidants and is more natural than artificial sweeteners. The combination of cassava starch with warm water and palm sugar is believed to help reduce stomach pain and improve digestive comfort. This ingredient is relatively safe, economical, and can be implemented in the community as a complementary therapy.

METHOD

The type of research used is quantitative research using a *quasi-experimental design and a two-group pre-test and post-test* approach method. *design*, namely the research design used involves two groups that are compared before and after the intervention . The purpose of this research is For know whether there is influence giving starch *Manihot schoolgirl* (starch cassava) against decline gastritis pain in patients seeking treatment in Community Health Center Simpura , District Cape Coral Center , Bandar Lampung City. The time the research was conducted on June 2025. The population in this study was all patients diagnosed with gastritis and experiencing stomach pain who visited to Community Health Center Simpura. Sample selection used a purposive sampling method with inclusion criteria, namely patients diagnosed with gastritis experiencing stomach pain, aged 18-60 years, not allergic to cassava, able to communicate well and willing to be respondents.

In this study, the sample used was 35 respondents. The number of respondents will be divided into 2 groups consisting of 16 respondents in the intervention group and 16 respondents in the control group, plus 1 respondent as a reserve. The sample in this study was given an intervention in the form of cassava starch administration of 250 ml/day, while the control group was not given cassava starch. Cassava starch was consumed on an empty stomach with administration in the morning for 7 consecutive days by visiting the respondents' homes directly. The data will be collected through observation sheet, using a pain measuring tool, namely the Numeric Rating Scales (pain scale 0-10), is a pain measuring tool that has the simplest appearance in *its application* so it is most often used compared to other measuring tools in research.

Data collection techniques were carried out univariately and bivariate. The univariate method was used to describe data characteristics of variables gastritis pain before And after giving starch cassava (*Manihot esculenta*) . Bivariate analysis was carried out to see changes before and after giving starch. cassava (*Manihot esculenta*) . The statistical test in this study began with a data normality test using the *Shapiro-Wilk test*. The results of the normality test showed that the data before and after the intervention were normally distributed, with $\alpha > 0.05$. Therefore, the bivariate analysis used was the paired t-test.

RESULTS AND DISCUSSION

Based on the results of the univariate analysis of the table above in the intervention group before and after administration of cassava starch, the mean or average results of 1.76 decreased after being given cassava starch with a result of 0.35, namely the result of pain becoming no pain and mild pain.

Table 1.
Results of the Pre-Test and Post-Test for Pain Intensity Measurement in the Cassava Starch Intervention Group

Intervention Group	Mean	Standard Deviation	Maximum	Minimum
Pain scale before administration of <i>Manihot esculenta starch</i>	1.76	0.432	2	1
Pain scale after administration of <i>Manihot esculenta starch</i>	0.35	0.493	1	0

This research is in line with the research conducted by Satria (2022) entitled Reducing the Epigastric Pain Scale of Dyspepsia Patients Through Consumption of Tapioca Flour (*Manihot esculenta*) and Tropical Forest Honey. The results of the study showed that the average epigastric pain scale in dyspepsia patients before consuming tapioca flour porridge combined with honey was on a scale of 7 and after consuming tapioca flour porridge combined with honey it decreased to a scale of 4.

Another study by Assem et al (2021) stated that the effect of reducing the level of redness of the gastric mucosa between fresh cassava tuber juice, cassava starch suspension, and cassava starch porridge did not have a significant difference. This is because the starch content in the cassava starch suspension and cassava starch porridge is the same as calculated based on the results of the cassava tuber dose orientation with a dose volume of 2.5 mL. The starch content in the cassava starch suspension and cassava starch porridge is the same, but cassava starch porridge is more optimal than cassava starch suspension in reducing the level of redness in the gastric mucosa. This may be due to external factors that affect the effect of reducing the level of redness of the gastric mucosa from the cassava starch suspension, namely psychological conditions or *Helicobacter pylori* infection in the test animals so that the cassava starch suspension treatment is less than optimal in preventing red discoloration in the gastric mucosa of mice. In addition, it is suspected that the cassava starch porridge preparation which is already in the form of mucilage when given to the test animals allows it to accelerate its working mechanism, namely the process of coating the gastric mucosa. So the cassava starch porridge works more optimally compared to fresh cassava tuber juice and cassava starch suspension.

Table 2.
Results of the Pre-Test and Post-Test for Pain Intensity Measurement in the Control Group without cassava starch administration

No	Control Group	Mean	Standard Deviation	Mom	Min
1.	Pain scale before	1.59	0.712	1	3
2.	Pain scale after	0.47	0.514	0	1

Based on the results of the univariate analysis in the table above in the control group before and after not being given cassava starch, the mean or average result was 1.59, which only decreased slightly after not being given cassava starch with a result of 0.47, namely the result of severe pain to mild pain.

According to research conducted by Indriyani et al., 2024 with the title The Effect of Papaya Juice on the Duration of Pain in Gastritis Patients at the Kesuma Dadi Community Health Center, Bekri District in 2024, it can be seen that the average duration of pain in respondents who did not receive papaya juice intervention had an average value of 24.00 with a minimum value of 15 and a maximum value of 35. The researcher's assumptions about starch cassava For gastritis pain still persists limited, but a number of study beginning show potential benefit starch cassava in relieve symptoms of gastritis. Starch cassava, especially in form porridge or suspension, allegedly own antiulcer effect on animal try, which can reduce wound on stomach. Besides that, starch cassava Also trusted can neutralize sour stomach and coating wall stomach, so that potential relieve painful consequence sour rising stomach.

Table 3
Effects Before and After Administration of Cassava Starch on Gastritis Pain

	Before		After		Difference		p-value
	Mean	Elementary School	Mean	Elementary School	Mean	Elementary School	
Scale Gastritis Pain	1.76	0.432	0.35	0.493	1.41	0.061	0.000

Based on parametric statistical tests use paired t- test for painful before and after giving starch cassava obtained results decline painful For all 17 respondents from the mean or average, namely 1.41 with p value = 0.000 < = 0.005 p This means hypothesis in accept that shows existence influence giving starch cassava on gastritis pain in community health center. Study This in line with research conducted by Satria et al (2022) results Paired T test on describe p -value (0.000), p This means There is significant influence on consumption flour tapioca (*Manihot*) esculenta) combined with honey forest tropical to scale painful epigastrium on sufferers dyspepsia in region Work community health center North Samarinda. From the results study describe that happen decline scale painful epigastrium after intervention. Based on theory, pain is mechanism protective purpose For increase awareness that damage network has or will happen.

According to research by Indriyani et al (2024), it can be seen that the results of the independent sample t-test on the results of measuring the length of time for pain healing in respondents who were given and not given papaya juice intervention obtained a p-value of 0.024 (p-value < α (0.05), so it can be concluded that there is an effect of papaya juice on the length of time for pain healing in gastritis patients at the Kesumadadi Health Center, Bekri District in 2024. According to researchers, cassava starch has an effect on the healing time of pain due to its properties that help speed up the treatment of gastritis. Cassava or flour tapioca, has a number of benefit potential for health stomach, especially for sufferers problem stomach like indigestion. Starch cassava known can relieve nausea, neutralize sour stomach excess, and provide a sense of comfort on stomach. Besides that cassava contain fiber that can help launch digestion And prevent constipation, as well as starch good resistance For health content high water Also can help speed up reduce sour stomach.

Tabel 4
The effect of pain intensity between the intervention group and the control group after being given *Manihot esculenta* starch

	Group Intervention		Group Control		Difference		p-value
	Mean	Elementary School	Mean	Elementary School	Mean	Elementary School	
Scale Gastritis Pain	0.35	0.493	0.47	0.514	-0.12	-0.021	0.608

Based on parametric statistical tests use paired t- test for painful before And after giving starch cassava obtained results decline painful For all 17 respondents from the mean or average , namely 0.35 and 0.47 with p value = 0.608 > = 0.005 p This means hypothesis rejected which shows existence No there is an influence between group show No existence influence between group show No existence influence between group intervention And group control on gastritis pain in community health center. The intervention group given cassava starch for seven days showed a significant reduction in pain intensity after the intervention, compared to the control group. This reduction indicates that cassava starch has a therapeutic effect on gastric pain caused by mucosal irritation, especially in patients with mild to moderate gastritis. This is supported by research conducted by (Satria et al, 2022) which stated that consumption of cassava starch (*Manihot esculenta*) significantly reduced the epigastric pain scale in dyspepsia patients for seven days, with a p value = 0.000 after a paired t-test. The reduction in the pain scale from an average of 7.00 to 4.47 indicates the effectiveness of the active compounds in cassava starch on dyspepsia symptoms in the North Samarinda Community Health Center work area. The physiological effects of consuming tapioca flour and tropical forest honey generally work on the gastric mucosa because the content of bioactive compounds such as saponins, tannins and flavonoids which are

known to have anti-inflammatory effects, can improve the healing process in the gastric mucosa and bacterial attacks.

Researchers assume that the effect of reducing pain intensity between the intervention group and the control group is influenced by the presence of active substances in cassava starch. (*Manihot esculenta*), particularly its amylose, amylopectin, and bioactive components such as saponins and flavonoids. These compounds can form a protective layer on the gastric mucosa and suppress inflammation, a finding not seen in the control group. The success of the intervention was also influenced by consistent consumption and respondent compliance with established administration procedures.

CONCLUSION

Administration of cassava starch (*Manihot esculenta*) has been shown to reduce pain intensity in gastritis. Respondents given a cassava starch solution experienced a significant reduction in pain compared to the control group. The amylose and amylopectin in cassava starch are thought to form a protective layer in the stomach, thereby helping to relieve irritation. Cassava starch can be a safe and easy-to-use natural therapy alternative.

REFERENCES

- Andari, W. (2020). *Quantitative and Qualitative Research Methods in Health* . 5–16.
- Ardini. (2020). *The process of making cassava flour at PT. Agung Bumi Agro. Pasuruan* . 19 (5), 1–23.
- Assem, VS, & Hardia, L. (2021). The Effect of Cassava (*Manihot utilisima* Pohl.) Tubers in Reducing the Level of Gastric Mucosal Redness in Male Wistar Rats Induced by Aspirin. *Jurnal Etnofarmasi* , 1 (1), 49–90. <https://unimuda.e-journal.id/jurnalfarmasiunimuda/article/view/1619>
- Astuti, SI, Arso, SP, & Wigati, PA (2022). Analysis of the Effect of Non-Pharmacological Therapy on Pain Intensity in Patients with Gastritis Cases in the Emergency Room: Literature Review. *Analysis of Minimum Service Standards in Outpatient Installations at Semarang City Hospital* , 3 , 103–111.
- Bojarczuk, A., Sk, S., Mousavi, A., & Marsza, K. (2022). *Health benefits of resistant starch: A review of the literature* . 93 (April). <https://doi.org/10.1016/j.jff.2022.105094>
- Dewi, NPASP (2022). Overview of Dietary Patterns in Gastritis Patients at Wangaya Regional Hospital in 2022. *Diploma Thesis, Poltekkes Kemenkes Denpasar, Department of Nursing* . , 1–23
- Dewi, SR, Widyasanti, A., & Putri, SH (2023). The Effect of Cassava Starch Concentration on the Characteristics of Edible Films Made from Cassava Starch with the Addition of Starfruit Leaf Extract. *Journal of Tropical Agricultural Engineering and Biosystems* , 11 (2), 158–167. <https://doi.org/10.21776/ub.jkptb.2023.011.02.05>
- Gustini, Sarma, JN, Yanriatuti, I., & Amelia, D. (2023). Nursing Care for Acute Pain in Gastritis: A Case Study. *Journal of Health and Technology* , 1 (1), 2–5
- Hermawan, AA (2023). The Relationship Between Eating Habits and Stress Levels with the Incidence of Gastritis in the Pringsewu Community Health Center Work Area in 2023 (Doctoral dissertation, Muhammadiyah University of Pringsewu). <http://repository.umpri.ac.id/id/eprint/1201/>.
- Ical Aprianto1, Muh Zakir Muzakkar, Mariani L (2024) . The Effect of Adding Palm Sugar (*Arenga Pinnata*) on the Organoleptic and Physicochemical Properties of Carrot Juice (*Daucus Carota*) Drink
- Indriyani, DA, Andora, N., & Yudha, F. (2024). *The Effect of Papaya Juice on the Duration of Pain in Gastritis Patients at the Kesumadadi Community Health Center, Bekri District in 2024*. 4 , 8261–8270
- Melisa, M. (2022). Implementation of Learning Vector Quantization (LVQ) in Identifying Original Palm Sugar from Mixed Palm Sugar. *Sci-Tech Journal* , 1 (1), 39–51.

<https://doi.org/10.56709/stj.v1i1.18> .

- Mirawati, A., Apriliani, I., Zulharmaswita, Z., & Deswita, D. (2024). Description of Stress Levels and Eating Patterns in Gastritis Patients at Tanjung Paku Community Health Center, Solok City in 2024. *Journal of Independent Healthy Nursing* , 2 (1), 39–54.
- Mohidin, SRNSP, et al. (2023). Cassava (*Manihot esculenta* Crantz): A Systematic Review for the Pharmacological Activities, Traditional Uses, Nutritional Values, and Phytochemistry. *Journal of Evidence-Based Integrative Medicine*. <https://doi.org/10.1177/2515690X231206227>.
- Muhammadiyah, U., Timur, K., Muhammadiyah, U., & Timur, K. (2022). *P - ISSN: 2503-4413 E - ISSN: 2654-5837, Pages 415 - 416 Reducing Epigastric Pain Scale Of Dyspepsia Patients Through The Consumption Of Tapioca Flour (Manihot Esculenta) And Tropical Forest Honey: Pre-Experimental Study . 10* (1) .
- Ratnasari, D., Farhan, Z., Sujana, D., Studi S-, P., STIKes Karsa Husada Garut, K., Study III Nursing STIKes Karsa Husada Garut, PD, & Study III Pharmacy STIKes Karsa Husada Garut, PD (2022). Utilization of Palm Sugar as a Wound Treatment Media on Diabetic Ulcer Patients in Garut Regency. *Abdimas Galuh* , 4 (2), 1270–1282.
- Sari, ID, Fitri, S., Rahmat, W., & Putri, YA (2024). Public Knowledge About Gastritis in Gedong Subdistrict, East Jakarta. *IKIFA Journal of Pharmacy* , 3 (1), 137–143.
- Satria, AP, & Belakang, L. (2022). *Journal of Economics and Business, Vol. 10. No. 1 April 2022 P - ISSN: 2503-4413 E - ISSN: 2654-5837, Pages 415 - 416 Reduction in Epigastric Pain Scale in Dyspepsia Patients Through Consumption of Tapioca Flour (Manihot Esculenta) and Tropical Forest Honey: Pre-Study . 10* (1), 2009–2012 .
- Sirka Health. (2023, August 22). Resistant Starch: A Carbohydrate That's Beneficial for a Healthy Gut. <https://www.sirka.health/blog/2023/08/22/pati-resisten-karbohidrat-yang-bermanfaat/>.
- Wati, NK, Kesumadewi, T., Inayati, A., Dharma, AK, & Metro, W. (2022). Implementation of Guided Imagery on Pain Scale of Thalassemia and Dyspepsia Patients in General Ahmad Yani Regional Hospital, Metro City. Implementation of Guided Imagery on Pain Scale of Thalassemia and Dyspepsia Patients in General Ahmad Yani Regional Hospital, Metro City. *Journal of Young Scholars* , 2 (3), 375–382
- Yunita, KD (2022). The Effectiveness of Lavender Aromatherapy in Reducing Pain Intensity in Post-Caesarean Section Patients: Literature Review Method. *Global Health* , 167 (2), 1–5. <https://www.e-ir.info/2018/01/14/securitisation-theory-an-introduction/> .