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RESEARCH ARTICLE

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Analysis sensory edible film from Banggai yam starch phosphate

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Abstract
Resilience and acceptance of sensory edible film from phosphorylated yam starch with a concentration of different glycerol still not yet fully answered, necessary There is an effort for varying the concentration of glycerol influences characteristic mechanical and functional from edible film. research This proposed for to study the variation concentration glycerol influence characteristic Mechanic from edible film so that to obtain the evaluation from panelist related sensory. Analysis sensors are used to obtain character products by what is received by the senses of sight, smell, taste, and touch. Analysis sensory in study This involves students from the Faculty Agriculture Department of Tadulako University, as many as 15 people. Edible film samples are cut small and tested color, texture, aroma, and power in a way overall use scale hedonic 7 points namely 7 = really like, 6 = really like, 5 = like, 4 = neutral, 3 = no like, 2 = very much not like, 1 = very much not like. Panelists evaluate attributes provided on a hedonistic scale by preference them. Based on results and discussion, then study This conclude that analysis sensory that is color (2.5 – 5.3) or (no like / dislike very much like - like); texture 2.3 – 5.6 or (very dislike) like – really like); aroma (3.1 – 6.6) or no like – really like); overall (2.6 – 5.2) or (not up to). The panelists preferred the B1R1P2 treatment (2 gr PBYS, 2% STPP, 30% Glycerol); while the aroma in the B2R2P1 treatment (3 gr PBYS, 10% STMP, 10% Glycerol)..

KEYWORDS
Analysis sensory, color, aroma, texture, overall.

1. INTRODUCTION

Edible film or a thin layer that can consumed own potential as replacement packaging environmentally friendly plastic environment (Karyantina et al., 2021) . It can be used in a variety of food sector applications as an alternative to synthetic packaging, lowering plastic waste and pollution worldwide while also benefiting human health and the environment (Rahmawati et al., 2024). Development of edible films made from base modified yam starch through the process of phosphorylation become an interesting alternative, considering material the natural, easy decomposed, and safe for consumption. In addition that, the addition of plasticizers such as glycerol allows edible film to more flexible and have characteristic more mechanics good (Dewi et al., 2021; Larasati et al., 2024; Rizqi et al., 2023). Therefore, understanding deeply about concentration glycerol to the characteristics of edible film is very necessary

for maximize its functionality in application commercial.

Various studies have been done related to edible film from material natural, including modification starch for increase resilience mechanics and transparency. Improvement of edible film quality of Banggai yam after modified the essence (Ulyarti et al., 2020) . Improvement thickness and solubility edible film and lower rate transmission water vapor, after adding sodium tripolyphosphate to starch original so that can change characteristics his physical (Ulfiasari et al., 2020). Wet noodles are substituted taro flour shows that panelist more like noodles wet with modified taro flour with STPP (Tahir et al., 2024) . In addition, research Ardi et al. (2023) find that addition glycerol as an influential plasticizer significant to texture and elasticity of edible film. Research This supports development of edible film with modification chemistry on materials experience.

Although has There is study previously, problem about resilience and acceptance sensory edible film from phosphorylated yam starch with concentration different glycerols still not yet fully answered. Based on matter said, research This proposed to study more carry on How variation concentration glycerol influence characteristic mechanical and functional from edible film. With thus, research this expected can offer optimal solution in utilization Banggai yam starch for edible film applications that have performance superior.

Research purposes This is for evaluating characteristics sensory edible film from phosphorylated yam starch with addition glycerol at varying concentrations. Contribution main from the study is to provide empirical data about influence concentration glycerol to color, texture, aroma, and power receive edible film. The result of the study that this expected can become reference in development of environmentally friendly edible films environment as well as own quality that can accepted by consumers, so that potential for applied in industry food. This research can also provide an environmentally friendly alternative packaging product to replace conventional plastic which is difficult to decompose and can be produced that is useful for human health.

2. MATERIALS AND METHODS

2.1 Materials

Materials used in phosphorylated Banggai yam starch (PBYS) making includes: Banggai yam starch (BYS), distilled water, 3% NaOH, Sodium Trimetaphosphate (STMP), Sodium Tripolyphosphate (STPP), HCl, 95% ethanol. While materials used in the manufacture of PBYS edible film include PBYS and glycerol.

2.2 Data collection procedures

Analysis sensory is the method used for obtaining, measure, analyze and interpret reaction to character materials and products by what is received by the senses sight, smell, taste, and touch. Tests of sensory profiles are intended to detect and quantify sensory attributes. taste/texture profile to explain the textural qualities of food and to describe the flavor and scent of food goods. The fifteen panelists underwent a sensory profile test which included the sensory profile of taste, aroma intensity and liking tests which were categorized using scale categories. The scale category is a description that describes the intensity of a quality attribute or the magnitude of the value of a quality attribute based on one sample. Panelists determine their assessment by marking a vertical line on a 10 cm long straight line scale for each level of intensity which includes aroma taste intensity (not strong to very strong), and liking test (don't like it to very like it) (Lawless & Heymann, 2010).

Analysis sensory in study This involving student from Faculty Agriculture Department of Tadulako University as many as 15 people (Hamsiohan, 2019). Edible film samples cut small and tested color, texture, aroma, and power accept in a way overall use scale hedonic 7 points namely 7 = really like, 6 = really like, 5 = like, 4 = neutral, 3 = no like, 2 = very much not like, 1 = very much not

like. Panelists evaluate attributes provided in scale hedonistic by preference they.

2.3 Data analysis

Data analysis using Excel and processed according to panelist assessments.

3. RESULTS AND DISCUSSION

3.1 Results and discussion

Color

Testing sensory the color of edible film is one of the steps important for evaluate quality and preference consumer to product The color of the edible film can be influenced by various factors, such as material raw materials used, manufacturing process, and additions material additional. Some factors that can influence edible film colors, including: types material the standard used will influence edible film color. The process of making edible film, such as temperature and time drying, can influence edible film color. Addition materials, such as dyes, antioxidants, and plasticizers, can influence edible film color. Treatment of 2 gr PBYS, 2% STPP, 30% Glycerol had a significant influence on the color of edible film according to the panelists. Here is the average rating edible film color of sweet potato starch phosphorylated shown in figure 1.

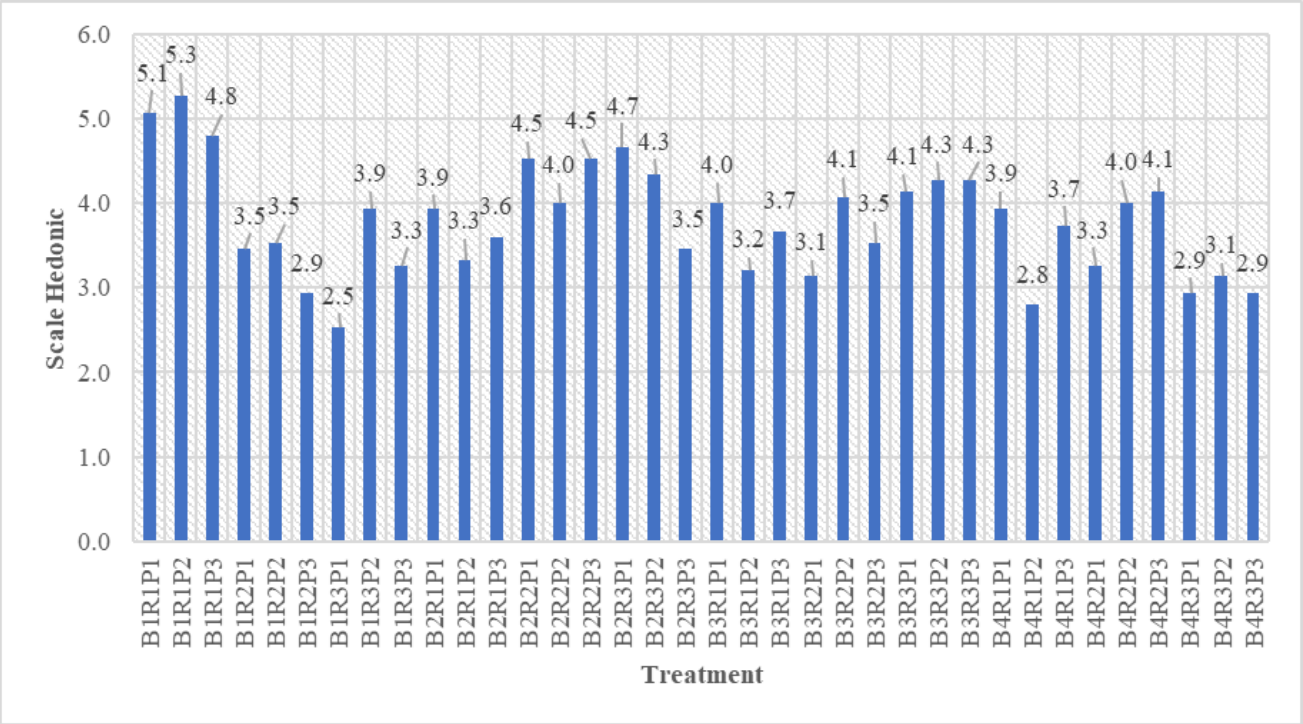

Figure 1. Edible Film Color Assessment of PB

Figure 1 shows evaluation the highest color of PBYS edible film its value is B1R1P2 (2 gr PBYS, 2% STPP, 30% Glycerol) with value 5.3 or in category likes and ratings the lowest color of PBYS edible film its value is B3R1P1 (4 gr PBYS, STPP 2%, Glycerol 10%) with value 2.5 or in category between No like and dislike very much like, or in other words assessment The color of PBYS edible film ranges from 5.3 to 2.5 (like – dislike) like / dislike very much like). This is show administration of 2% STTP and 30% glycerol resulted in color more interesting and liked by the panelists than treatment others. This is by research that has been conducted by Maharani et al. (2017) , that when starch modified using sodium tripolyphosphat, color

starch changed, which in turn influence edible film transparency. Giving glycerol can influence edible film color according to with results research by Ardi et al. (2023) , that moment making edible film, color is factor important Because influence appearance products and receipts customer.

Texture

Testing sensory the texture of the edible film aims to evaluate characteristic physical and perceptual sensory from the film. Edible film is a thin layer that can consumed and used for to coat food use increase quality and power save product. Testing sensory This involving panelist from student for give evaluation based on experience senses they to characteristics film texture. Average value edible film aroma testing can be seen in Figure 2.

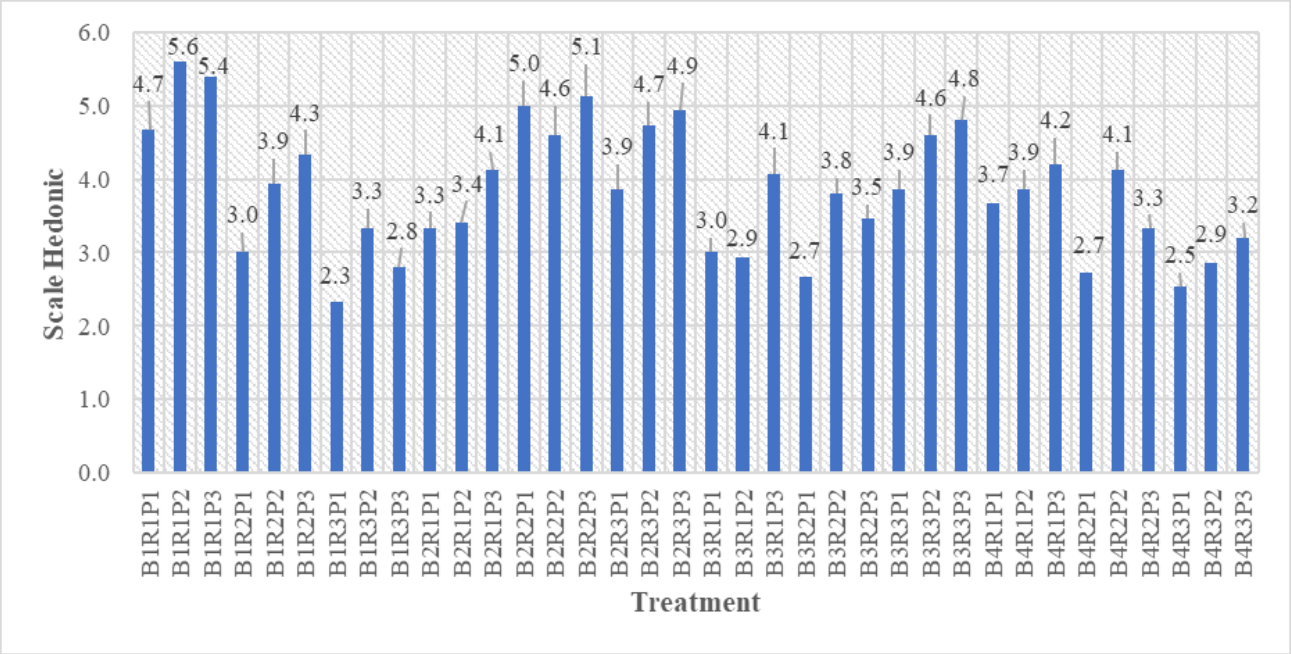

Figure 2. Assessment Edible Film Texture of PBYS

Figure 3 shows evaluation PBYS edible film texture is the highest its value is B1R1P2 (2 gr PBYS, 2% STPP, 30% Glycerol) with value 5.6 or in very like and rating category PBYS edible film texture is the lowest its value is B3R1P1 (4 gr PBYS, STPP 2%, Glycerol 10%) with value 2.3 or in very bad category like, or in other words assessment PBYS edible film texture ranges from 5.6 – 2.3 (very much like – very much dislike) like). This show administration of 2% STTP and 30% glycerol resulted in texture being more interesting and liked by the panelists than treatment others. This is can influenced by the presence of use glycerol (Privitasasi et al ., 2022) because of addition of plasticizer can produce more edible film texture fine the surface (Ciapponi et al ., 2019) . Compact starch molecules, cross-linking methylcellulose chitosan produces a film with a smoother and more transparent texture (Wang et al., 2019).

Aroma

One of quality food determined by the senses sense of smell is the aroma (Alfatahillah et al ., 2021) . The purpose of the aroma test is to know how much big favorite panelist against edible film from phosphorylated yam starch with addition

concentration different glycerol. The average value of edible film aroma testing can be seen in Figure 3.

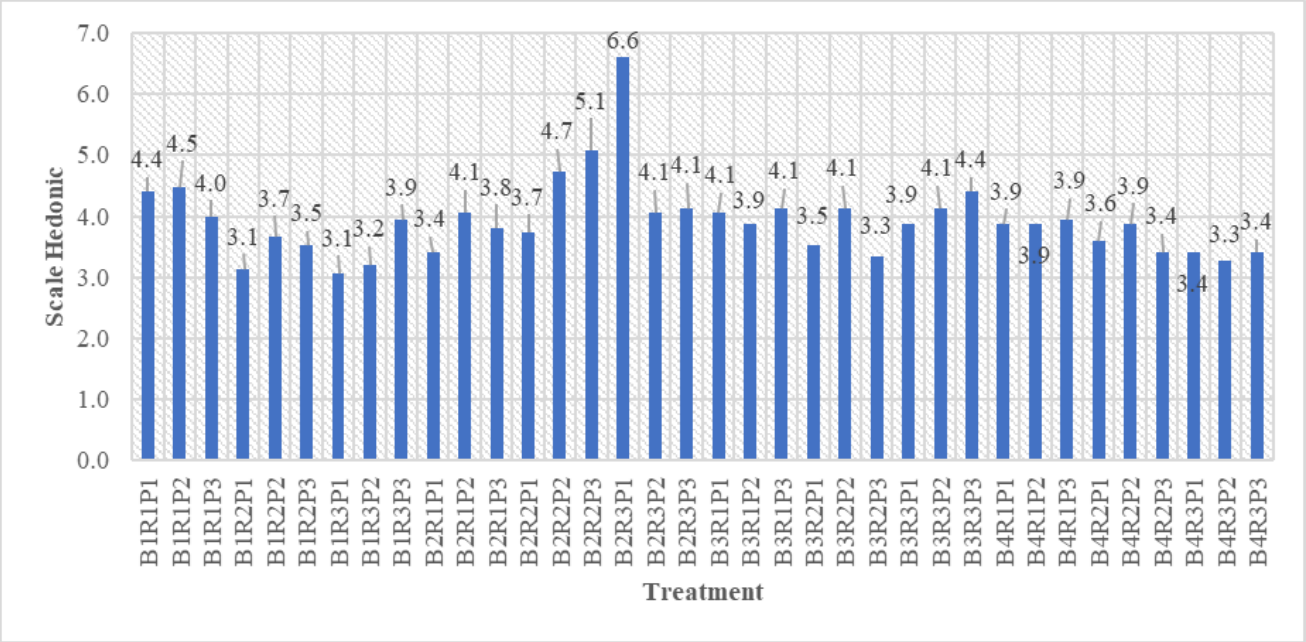

Figure 3. Assessment Edible Film the Aroma of PBYS

Figure 3 shows PBYS edible film aroma rating is the highest its value is B2R2P1 (3 gr PBYS, 10% STMP, 10% Glycerol) with value 6.6 or in category like it and the lowest rating for the aroma of PBYS edible film its value is B3R1P1 (4 gr PBYS, STPP 2%, Glycerol 10%) with value 3.1 or in category No like , or In other words, the aroma assessment of PBYS edible film ranges from 6.6 to 3.1 (very much like it - very much dislike it). like). This is shows that STMP and glycerol, each at 10%, produce an aroma that is very much liked by the panelists, this the can due to concentration The high cellulose in edible film has a sweet aroma so liked by panelists while STMP and glycerol No own smell. Appropriate study (Kadir et al. , 2023) that in concentration high cellulose (50% and 75%) bioplastic has a sweet aroma.

Overall

Overall testing aims to get Power accept in a way overall panelist against edible film from phosphorylated sweet potato starch with addition concentration different glycerol. The average value overall edible film testing can see in Figure 4.

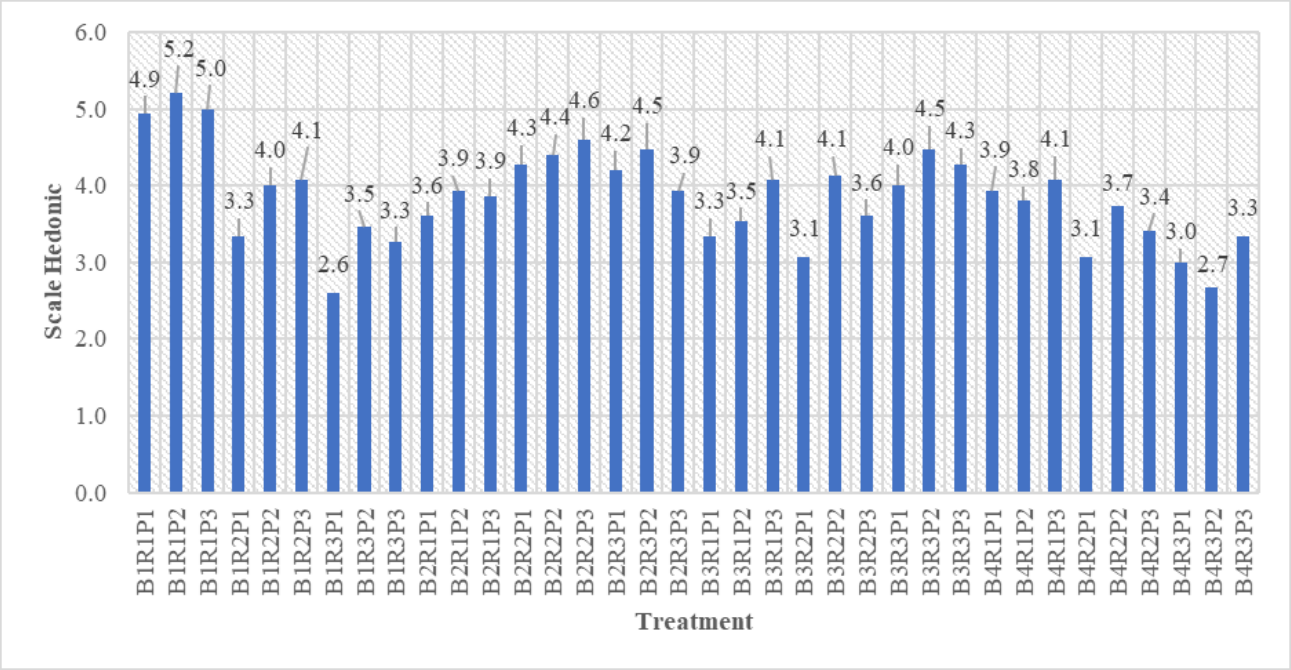

Figure 4. Overall Edible Film Assessment of PBYS

Figure 4 shows PBYS's highest overall edible film rating its value is B1R1P2 (2 gr PBYS, 2% STPP, 30% Glycerol) with value 5.2 or in category PBYS edible film overall likes and ratings are the lowest its value is B3R1P1 (4 gr PBYS, STPP 2%, Glycerol 10%) with value 2.6 or in category No like , or In other words, the overall assessment of PBYS edible film ranges from 5.2 to 2.6 (like - dislike) like). Rating highest overall edible film PBYS resembles assessment on testing color and texture of PBYS edible film. While For evaluation lowest overall edible film PBYS in terms of overall No like B3R1P1 treatment.

4. CONCLUSION

This research shows that the optimal formulation (B1R1P2: 2 gr PBYS, 2% STPP, 30% Glycerol) produces edible film with color, texture and overall characteristics that panelists like. These results can be used as a reference in developing edible film products for food industry applications, especially as an environmentally friendly replacement for conventional plastic packaging.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

Ramadhani Chaniago: Writing – original draft, Conceptualization. Asrani Hasanuddin: Conceptualization, Methodology, Supervision, Writing – review & editing. Abdul Rahim: Data curation, Conceptualization, Writing – review & editing. Darni Lamusu: Conceptualization, Methodology, Supervision, Writing – review & editing

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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