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Effect of Differences Molasses As A Composer Urea Molasses Block (UMB) On The Physical Quality of Feed

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Abstract

The aim of the research was to evaluate the effect of differences molasses as a composer Urea Molasses Block (UMB) on the physical quality of feed. Physical quality of UMB was evaluate by colour, aroma, flavor, and texture, oddour. The experiment were divided into 5 treatments and there were 6 replications in every treatment. The treatment were used molasses 30%, 32,5%, 35%, 37,5%, and 40% of the composition UMB. The data was analysed using Compeletely Randomized Design (CRD) and the significant level were analyzed by Duncan Multiple Randomized Design (DMRT). The results of this study was the used of molasses as a composer on UMB was not significantly different on colour, aroma, flavor and texture. It could be concluded that the used molasses up to 40% had a good results in term of colour, solid texture fungi, and textture.

Keywords: *molasses, UMB, physical quality feed*

1. Introduction

Molasses is a by-product of sugarcane processing which is usually used as an energy source. Molasses contains sugar and organic acids. In Indonesia, molasses is known as molasses. Where the sucrose content in molasses is quite high, ranging from 48-55% so it is used as a source of ethanol production. Molasses has the potential to be an additional feed ingredient containing minerals, energy sources, crude protein, and non-sugar organic materials (Mayulu, 2023).

Molasses is usually thick brown in color which in addition to being used as a source of raw material for making ethanol is also used as a raw material for making alcohol, citric acid, MSG, and gasohol. Molasses contains substances that are beneficial for animals and plants, including calcium, magnesium, potassium, and iron. In addition, molasses can be used as a good chelating agent in changing chemical nutrients into simple forms so that they can be utilized by animals and plants (Anwar and Suganda, 2002).

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Molasses waste in Indonesia reaches 1.3 million tons/year which will increase to 1.8 million tons/year (Utami, 2009). This can be utilized by farmers to make feed using molasses. Urea multinutrient block is a supplementary feed with nutritional content including energy, protein and minerals for ruminants in the form of solid blocks (Singh et al., 2015). This supplementary feed is useful in meeting nutrition and increasing the productivity of ruminant livestock, in addition this supplementary feed can maximize the performance of rumen microbes which make feed easier to degrade (Suharyono et al., 2014).

UMB is usually referred to as livestock candy which is composed of materials such as molasses as an energy source, urea as a nitrogen source, and other materials such as salt, mineral mix, and cement as complementary food substances and bran and rice bran as fillers that can absorb molasses as the main ingredient. UMB In addition to being intended to increase the adequacy of energy, protein, vitamins and minerals, it can also increase the palatability of basal feed for ruminant livestock (Yanuartono et al., 2019).

In addition, molasses can be used to make Urea Molasses Block (UMB) because it is a source of carbohydrates that are easily digested by ruminant animals. The use of molasses as an energy source in the preparation of UMB affects the quality of UMB. So this study was conducted to determine the physical quality of UMB by adding molasses with different compositions.

2. Materials and Methods

Research Material

This study uses materials for making Urea Molasses Block (UMB) namely bran, pollard, molasses, cement, mineral mix, salt, and urea. UMB mold, a place to mix materials is made of a bucket and stirrer.

Research methods

The research method consisted of 5 treatments with 6 replications. The treatment in the study was the use of molasses listed in Table 1.

Procedure for Making Urea Molasses Block (UMB)

The process of making Urea Molasses Block (UMB) is to weigh the filler materials in the form of bran and pollard according to the needs of each treatment and put into a bucket. Next, add materials in the form of cement, mineral mix, salt, and urea. Molasses is put in according to each treatment. The Urea Molasses Block (UMB) dough is then mixed evenly and printed using a Urea Molasses Block (UMB) printer.

Parameters measured

The parameters measured to determine the success of this study were color, aroma, taste, and texture. The assessment of color was based on the level of darkness and the presence of white spots on the UMB. Texture assessment was done by feeling the texture of the UMB. The sense of smell was used to assess the aroma of the UMB (typical molasses aroma, no rancid odor).

Physical Properties Analysis Procedure

The physical quality of UMB includes color, odor, taste and texture. Physical observations are made by scoring each UMB criterion as seen in Table 2.

Data analysis

The data obtained were analyzed statistically using analysis of variance (ANOVA) from Completely Randomized Design (CRD). Furthermore, to determine the differences between treatments, Duncan's Multiple Range Test was used.

3. Results and Discussion

The results of the research on the addition of molasses in the manufacture of Urea Molasses Block (UMB) are presented in Table 3.

Table 1. Composition of Urea Molasses Block (UMB) (%)

Material	Treatment (%)				
	P1	P2	P3	P4	P5
Bran	25	22.5	20.5	20	20
Pollard	25	25	20.5	22.5	20
Cement	15	15	15	15	15
Mineral	24	24	24	24	24
Salt	6	6	6	6	6
Urea	15	15	15	15	15
Molasses	30	32.5	35	37.5	40

Table 2. Physical observations for each criteria

Criteria	Characteristics	Score
Color	Dark brown/black	3-3.9
	Mud Chocolate	2-2.9
	Brown with white spots	1-1.9
Aroma	Molasses specialty	3-3.9
	Odorless	2-2.9
	Rancid	1-1.9
Flavor	Sweet	3-3.9
	A little sour	2-2.9
	Sour	1-1.9
Texture	It has a rough, solid texture (not easily broken) and is not slimy.	3 - 3.9
	Has a rough texture, breaks easily and is not slimy	2 - 2.9
	Has a wet texture, easy to break and slimy	1 - 1.9

Table 3. The Influence of Differences in Molasses as a Component of Urea Molasses Block (UMB)

Regarding the Physical Quality Test of Feed

Variables	Treatment (%)				
	P1	P2	P3	P4	P5
Colors	4.0±0.06	3.9±0.02	4.0±0.03	3.9±0.04	4.0±0.03
Aromas	2.0±0.04	2.0±0.02	2.0±0.02	2.0±0.04	2.0±0.03
Taste	1.0±0.04	1.0±0.01	1.0±0.02	1.0±0.03	1.0±0.03
Textures	2.3±0.08	2.3±0.02	2.3±0.03	2.4±0.03	2.4±0.12

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Effect of treatment on color

The results of the statistical analysis in Table 3 show that the treatment carried out in the preparation of UMB showed results that were not significantly different (P<0.05) on the color of UMB.

The results of qualitative observations are color 1 whitish brown, 2 light brown, 3 brown, 4 dark brown.

Based on the research results, it shows that P1 shows dark brown results.

The results of the study (BPTP Bengkulu, 2015) stated that the quality of good Urea Molasses Block (UMB) is ripe brown. UMB is an additional material given to livestock whose main ingredients consist of molasses as an energy source, urea as a nitrogen source, and other ingredients such as salt, mineral mix, and cement as complementary food ingredients and bran and rice bran as fillers that can absorb molasses as the main ingredient.

The addition of molasses to UMB can cause a dark color change, the color comes from the basic color of molasses, which is blackish brown. Hermawan et al. (2015) explained that the resulting color is a carbohydrate reaction (Maillard reaction), where reducing sugars and primary amino acids produce melanoid compounds. The change factor of the sugar which contains a delicious aroma and taste can affect the level of consumption in livestock. Widiastuti (2013) added that when the molasses gets darker, it is the result of high absorption of molasses. The color assessment indicators used are light brown and dark brown (Afrianto and Triasih, 2023)

The use of 30 to 40% molasses in the UMB mixture showed good colors in sequence, namely P1 dark brown (4), P2 dark brown (3.9), P3 dark brown (4.0), P4 dark brown (3.9), and P5 dark brown (4.0). This shows that the treatment of Urea Molasses Block (UMB) provides good color, namely dark brown.

Effect of treatment on aroma

Based on the results of statistical analysis in Table 2. shows that the use of molasses in the preparation of Urea Molasses Block (UMB) showed results that were not significantly different (P <0.05) to the aroma of UMB. Qualitative tests on the aroma of UMB were 1 no aroma and 2 had the aroma of molasses. The aroma of good UMB has a fresh aroma and is not rancid. Utomo (2012) said that the aroma of fresh feed will increase consumption by livestock. Factors that affect the aroma of UMB are raw materials, storage time, and nutritional content of feed ingredients.

The fragrant aroma of UMB is due to molasses having a basic aroma that is already fragrant. Krisna and Ginting (2009) stated that a delicious feed aroma can increase livestock palatability. This statement is supported by Ismi et al. (2017) that livestock like feed with a fragrant, fresh and non-rancid aroma. So that the aroma can affect the palatability and acceptance of livestock. The aroma assessment indicator used is not rancid or has a distinctive molasses smell (Afrianto and Triasih, 2023).

Effect of treatment on taste

The results of statistical analysis showed no significant difference (P<0.05) in the taste of UMB. The results of the taste test observations conducted showed that all treatments showed no significant difference. In all treatments, the existing taste was sour.

Effect of treatment on texture

The results of the statistical analysis in Table 3 show that the treatment carried out in the preparation of UMB shows results that are not significantly different (P<0.05) on UMB texture. Results qualitative observation, namely 1 crumb, 2 is a bit hard, and 3 is hard. Based on the results it is stated that the P1 results show the results which is not too hard.

The texture of the feed is influenced by the fineness of the raw materials, the amount of fiber, and the type of binder used. The addition of adhesive will help the feed ingredients to bind to each other, which will cause a change in texture to become denser. Widiastuti (2013) added that the quality of the texture is influenced by the water content and crude fiber in the feed, feed containing high crude fiber will make the texture hard.

Texture is used for see the level of fineness of the ingredients, quantity adhesive and fiber. Ismi et al. (2017) explains that the quality of the fineness of the material, The amount of adhesive and fiber can affect feed texture. If the feed is fine textured, then it will increase the potential for consumption livestock. Furthermore, it will affect the digestibility and absorption rate of metabolic results. Widiastuti (2013) explained that the quality of feed texture can come from crude fiber and water content, so that feed that has high crude fiber will form a hard texture. The texture assessment indicators used are soft, slightly hard and hard (Afrianto and Triasih, 2023)

4. Conclusion

It could be concluded that the used molasses up to 40% had a good results in term of colour, aroma, flavor, and texture

5. References

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