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Organoleptic Analysis Test and Proximate of Seruni Plants (Wedelia Biflora) as Animal Feed

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ABSTRACT: This research was conducted in Ruteng City in February-April 2023 with the aim of determining the nutritional content of seruni leaves (wedelia biflora). This study uses a direct experimental method. The first stage is an organoleptic test and continued with a proximate analysis. The treatment to be tested is P0: Seroni leaf flour taken in Ruteng City; P1: Seroni leaf flour taken around Ruteng City. This study used the t-test to evaluate significant differences in the nutritional content of Seruni leaf flour in the area around Ruteng. The results of the proximate analysis of Wedelia biflora leaves showed that this leaf had a balanced nutritional composition, with a high content of dry matter (90%), crude protein (±16%), crude fat (±10%), crude fiber (±10%), carbohydrates (±57%), and BETN (±47%). This composition indicates that Wedelia biflora is a good source of nutrients, containing adequate protein, high enough fat, as well as dominant carbohydrates and BETN, making it an efficient source of energy. moderate content of crude fiber also contributes to digestive health. With a balanced nutritional composition and the benefits provided, Wedelia biflora has great potential as a feed additive for various types of livestock to support the growth, health, and productivity of livestock.

KEYWORDS: Organoleptic; Proximate; Wedelia biflora.

BACKGROUND

Manggarai Regency, East Nusa Tenggara (NTT) has high rainfall of 353.33mm (BPS NTT, 2023) so that many various plants grow and can be made into feed. One of them is the Seruni plant (Wedelia biflora) and this plant is very often used by the people of Manggarai as feed for livestock. Seruni leaves are efficacious as analgesic (Rinidar et al., 2014), other properties are as antipyretic (Meena et al., 2010), antiplasmodium, antimicrobial, antifungal, and anti-inflammatory (Sahayaraj et al., 2015). According to Rinidar et al., (2014) stated that this seroni plant comes from the Arteceae family which contains secondary metabolite compounds such as flavonoids, alkaloids and terpenoids that are used as feed additives in livestock rations.

additives in feed can be natural ingredients such as vitamins, minerals, amino acids, fatty acids, and probiotics, or artificial ingredients such as antibiotics, growth hormones, and digestive enzymes. Feed additives added to the ration contain synthetic compounds that have been proven to have high side effects such as damaging the hormonal and immune systems (Sinurat et al., 2003), causing microbial retention and antibiotic residues in the livestock's body and endangering humans who consume them. This is the basis for the creation of government regulations on the use of antibiotics in feed additives contained in article 16 of Ministerial Regulation No. 14/2017.

Referring to the Ministerial Regulation Article 16 No.14/2017 and observing the habits of farmers in Manggarai who use seruni plants as feed, it is necessary to conduct research to see the nutritional content through proximate analysis and bacterial content through bacterial analysis. The seruni plant has the opportunity to be used as a natural feed additive in feed because of its abundant population in Manggarai and also has a positive value for livestock. In the study Eliawardani, (2015) showed that the higher the dose of seruni leaf extract, the better the effect in reducing the percentage of antitripanosomal parasitemia in white rats (Rattus norvegicus). In addition, the content contained in Seruni leaves is one of the plant species that contains alkaloid compounds, steroids, terpenoids, phenols, saponins and includes flavonoid compounds (Ulvia, 2017). The purpose of this study is to determine the nutritional content of seruni plants so that they can be the basis for the use of Seruni plants as feed ingredients for livestock.

MATERIALS AND METHODS

Research Methods

This research was carried out in Tenda Village, Langke Rembong District, Manggarai Regency, East Nusa Tenggara Province (NTT) from February-April 2024 from the collection of materials and proximate analysis in the Laboratory. This research was conducted through a direct experimental method.

Research Procedure

The first step is to collect Seruni plants from Ruteng (P1) and around Ruteng (P2) then seruni leaves will be organoleptic tested at the Animal Husbandry Laboratory of the Catholic University of Indonesia Santu Paulus Ruteng in the form of color, texture, aroma and taste. After the test was carried out, the seruni leaves were then dried in the sun using an oven to avoid humidity due to erratic weather and could affect the results of the analysis. Dried Seruni plants will be ground into flour, so that it can be easier to analyze. The resulting Seruni leaf flour will be sent as much as 100g per sample to the Feed Chemistry Laboratory at the Faculty of Animal Husbandry, Marine Affairs, and Fisheries, Nusa Cendana University for proximate analysis.

Treatment Materials

The treatments to be tested are:
P0: Seroni leaf flour taken in Ruteng City
P1: Seroni leaf flour taken around Ruteng City

Data Analysis

This study used the t-test to evaluate significant differences in the nutritional content of Seruni leaf flour in the area around Ruteng. The data obtained from the proximate analysis will be used in this t-test to identify whether there are significant differences between different sample groups.

RESULTS AND DISCUSSION

Organoleptic Test

Organoleptic test is a test carried out on feed which includes texture, aroma, color and taste of feed (Aslamyah & Karim, 2013). The texture of the feed can be seen from the smooth or fibrous surface of the feed which is affected by the amount of fiber and the type of material used. Feed aroma determines feed quality because it is closely related to livestock palatability (Mulia et al., 2016). Color also determines the quality of fiber present in the plant, older leaves (usually larger and can turn yellow) tend to have a higher fiber content, which can be more difficult for livestock to digest. In contrast, younger leaves (bright green) typically have lower fiber and are easier to digest (Pade & Bulotio, 2019). The last test is taste, fresh and green leaves usually have a better taste and a more pleasant aroma and can increase the palatability of livestock (Novianti, 2017).

Colour

The colour of seruni leaves is bright green with fluffy hairs covering the tips of the leaves. Fresh green leaves indicate that the leaves have just been harvested and have not been degraded. This freshness is important because fresh leaves have a high water content, which helps in the digestion and hydration of livestock. Meanwhile, seruni leaves that begin to turn yellow or turn brown show signs of aging which are usually related to a decrease in nutrient content and an increase in fiber that is more difficult to digest (Hayati et al., 2023).

The colour of seruni leaf flour is greenish-brown caused by heating when drying using the oven. Drying using an oven with a regular temperature is advantageous because there will be a significant reduction in moisture content in a relatively short time (Fahmi et al., 2020). Furthermore, the nutrient content in plants is affected by the drying process. Proper drying will produce good quality simplicia so that it can be stored for a long time and there is no change in the active ingredients it contains (Singh & Singh, 2016).

Scent

The scent of seruni leaves is a distinctive smell. In general, the scent of seruni can be described as a strong but balanced scent of herbs, flowers, and freshness. This scent is preferred because it provides a refreshing effect and the scent is produced from essential oils (Ginting, 2012). According to research by Hitijahubessy et al., (2022) shows that the essential oils in seruni contain compounds such as linoleic acid, palmitic acid, citronelol, geraniol, and linalool. The seruni plant does contain essential oils that are rich in various volatile compounds.

Texture

Based on the results of the research, the texture of seruni leaves can be said to be quite thick, rough, and stiff with a spotted surface and covered with fine hairs. The fluffy hairs or trichomes found on the surface of seruni leaves have several important functions, such as reducing water evaporation in plants, protection from herbivores, protection from excessive solar radiation (UV) and as a temperature regulator in the plant (Suantini & Harwiningtias, 2014)

Taste

Based on the results of organoleptic tests, the seruni plant has a taste dominated by bitterness and spat, which is a natural characteristic of this plant. This flavor serves as a defense mechanism and can vary depending on the part of the plant. This taste is suspected to be related to the presence of tannins in the tissues of the seruni plant (Saleha et al., 2013). Tannins are polyphenol

compounds that can provide a sour and astringent taste. In addition, seruni also contains compounds such as lactones, flavonoids, and terpenoids that give the leaves, stems, and flowers of this plant a bitter taste (Purwasi et al., 2022).

Proximate Analysis Test

Feed proximate analysis is a chemical method used to determine the nutrient content of a feed ingredient. This method includes the analysis of fractions such as water, ash, crude protein, crude fat, and crude fiber (Andryarini & Hidayati, 2017). This proximate analysis is used to evaluate the quality of feed ingredients and make appropriate ration formulations for livestock. The results of the proximate analysis of seruni leaves can be seen in table 1.

Table 1. Results of Proximate Analysis of Seruni Leaves (Wedelia biflora)

Sample Code	DM (%)	DO (%)	CP (%DM)	CF (%DM)	CF (%DM)	CHO** (%DM)	EMWN** (%DM)	Gross Energy**		EM** Kkal/kg DM
								MJ/kg DM	Kkal/kg DM	
P1	92,01	85,57	16,81	10,81	10,75	57,94	47,18	17,78	4.235,58	3.589,11
P2	90,47	86,88	16,90	11,33	10,56	58,64	48,07	18,10	4.311,53	3.673,79

Description: Results of proximate analysis at the Feed Chemistry Laboratory, Faculty of Animal Husbandry, Marine and Fisheries, Nusa Cendana University, 2024.

The results of the proximate analysis of seruni leaves show that this leaf has a balanced nutritional composition with a high content of dry matter, good crude protein, significant crude fat, and dominant carbohydrates with a high proportion of BETN. Its moderate crude fiber content also contributes to digestive health. Thus, seruni has the potential to be a good feed ingredient for livestock, providing enough energy, protein, and fat to support animal growth and health.

Dry Materials (DM)

Dry matter is the part of the plant that remains after all the water has been removed. The high dry matter content of ±90% indicates that Seruni leaves have a low moisture content, around 10% which means that these leaves are relatively durable and do not rot easily, making them a good material for storage and transportation (Sumartini & Sari, 2021).

Crude Protein (CP)

Crude protein is the total amount of protein in a leaf, including true protein and non-protein nitrogen. The crude protein content of ±16% is quite high, indicating that seruni leaves can be a good source of protein for animal feed. Protein is essential for growth, tissue repair, and metabolic function of livestock (Januardani et al., 2023).

Crude Fat (CF)

Crude fat indicates the total fat present in the leaves. With a content of ±10%, seruni leaves contain a significant amount of fat. Fat is a solid source of energy and also plays a role in the absorption of fat-soluble vitamins and provides essential fatty acids for livestock (Kurniasih et al., 2015).

Crude Fiber (CF)

Crude fiber indicates the amount of fiber that cannot be digested by the digestive enzymes of cattle. With a crude fiber content of ±10%, this leaf contains a moderate amount of fiber, which can help in the digestive function and intestinal health of cattle (Rahmasari & Wahyuni, 2019). Fiber also helps regulate the digestive process and increases satiety (Sinulingga, 2020).

Carbohydrate (CHO)

Carbohydrates are the main component of dry matter that provides energy. The high carbohydrate content (±57%) shows that seruni leaves are a good source of energy for livestock. These carbohydrates include starch, sugar, and easily digestible fiber, all of which are important for energy and metabolic function (Nurhamidah & Erawati, 2016).

Extract Material Without Nitrogen (EMWN)

EMWN represents the portion of easily digestible carbohydrates, such as sugar and starch, after the crude fiber has been removed (Putri et al., 2021). With a content of 47%, EMWN shows that the majority of the carbohydrates in seruni leaves are easily digestible, making them an efficient source of energy for livestock.

CONCLUSION

The results of the proximate analysis of seruni leaves showed that this leaf had a balanced nutritional composition, with a high content of dry matter (90%), crude protein (±16%), crude fat (±10%), crude fiber (±10%), carbohydrates (±57%), and EMWN (±47%). This composition indicates that Wedelia biflora is a good source of nutrients, containing adequate protein, high enough fat, as well as dominant carbohydrates and EMWN, making it an efficient source of energy. The moderate content of crude fiber also

contributes to digestive health. With a balanced nutritional composition and the benefits provided, seruni has great potential as a feed *additive* for various types of livestock to support the growth, health, and productivity of livestock.

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