

NUTRITIONAL CHARACTERIZATION OF *Salvinia auriculata* FODDER, GROWN IN AQUAPONICS FOR RABBIT FEED, PRELIMINARY RESULTS

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Abstract

The aim of this study was to characterize nutritionally fodder *Salvinia auriculata* grown in aquaponics systems as alternative forage for rabbit feeding. The control diet was *Medicago sativa*, and both fodders were fed as hay (85 and 89% dry matter, respectively). Voluntary feed intake and apparent digestibility of dry matter (DM) were evaluated. For the study 24 specimens of *Oryctolagus cuniculus* Californian breed were used (48 to 53 days old, 1079 ± 73 g, 50% males and 50 % females) which were obtained from females in the Centro Nacional de Cunicultura (CNC, México) animal nucleus and reproduced in controlled conditions. Study was carried out in the CNC premises. The animals were individually kept in galvanized cages (60 x 90 x 40 cm), with basket for forage feeders and automatic water dispensers. The experiment lasted 11 days, 7 for forage adaptation and the last 4 for sampling. Every day at 9 am fodder (*S. auriculata* and *M. sativa*, 60 and 90 g, respectively) was offered, 24 h later refusals and feces were collected. Data were analyzed using Student's T-test. Preliminary results indicate that *S. auriculata* hay has a lower DM intake compared to *M. sativa*, 24.94 ± 2.8 and 48.72 ± 2.9 g day⁻¹, respectively (mean \pm SE). DM digestibility was lower for *S. auriculata* than *M. sativa*, however, the possibility of using this fodder cannot be ruled out completely, because DM digestibility values of 45.35 and 70.33 % for *S. auriculata* and *M. sativa* respectively were observed.

Keywords: Alternative fodder, aquaponic, feed intake, dry matter digestibility.

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Introduction

Aquatic fern *Salvinia auriculata*, has been listed as an invasive plant due to its adaptability and fast reproduction (León, 2013) and has potential as fodder (Banerjee y Matai, 1990). Plants from the genus *Salvinia* have been used as fish feed (Ray y Das, 1992) and according to Henry-Silva and Monteiro (2002), can be alternative fodder for ruminant. However to date, according to the literature, this plant has not been evaluated for rabbit consumption. Aquaponics has been proposed as a sustainable alternative to control the accumulation of waste produced by fish farming, and can be defined as the integration of production plants hydroponically a recirculating aquaculture system (Parker, 2002; Van Gorder, 2000). Californian breed rabbits have unique features such as the production of high quality meat and high commercial value skin, therefore, are considered dual purpose breed. It is characterized as white with black markings on muzzle, ears, paws and tail and reaches in adulthood a weight of 4.1 kg for males and 4.3 kg for females (Martínez, 2004). The aim of this paper is to present the preliminary results of a study of *S. auriculata* grown in aquaponics as an alternative fodder for rabbits.

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Material

For the study 24 specimens of *Oryctolagus cuniculus* California breed were used (48 to 53 days old, 1079 ± 73 g, 50% males and 50 % females) which were obtained from females in the Centro Nacional de Cunicultura (CNC, México) animal nucleus and reproduced in controlled conditions. Study was conducted in the CNC premises. All the animals were randomly placed and kept individually in galvanized cages (60 x 90 x 40 cm), with basket for forage feeders and automatic water dispensers. *Salvinia auriculata* plants were obtained from the Experimental Aquaponic Unit of the Agronomy Department at the Life Sciences Division (DICIVA), Campus Irapuato-Salamanca of the Universidad de Guanajuato, which were dried for 48 h in plastic mesh boxes (1 x 1 m) that were built for hay production. The control diet was *Medicago sativa* (acquired from a commercial store) and both fodders were fed as hay (85 and 89% dry matter, respectively).



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Methodology

Preliminary results of voluntary feed intake and apparent digestibility of dry matter (DM), are presented because to date has not yet completed the full study of the nutritional characterization. Upon entering the production shed, individuals were weighed (scale TECNOCOR Mod PPN-30). The experiment Lasted 11 days, 7 for forage adaptation and the last 4 for sampling. Every day at 9:00 a.m. fodder (*S. auriculata* and *M. sativa*, 60 and 90 g, respectively) was offered and 24 h later, refusals and feces were collected. The evaluated variables were consumption and apparent digestibility of DM. Data were analyzed using Student's T-test.

Results and discussion

Preliminary results indicate that *S. auriculata* hay has a lower DM intake compared to *M. sativa*, 24.94 ± 2.8 and 48.72 ± 2.9 g day⁻¹, respectively (mean \pm SE). DM digestibility was lower for *S. auriculata* than *M. sativa*, 45.35 and 70.33 %, respectively. According to Leterme et al. (2009), *Salvinia* is a good source of minerals and essential amino acids, however, its use in pig feeding is limited due to their fiber content, resulting in low digestible energy and protein content, so that, due to fiber requirements in rabbits, could be an alternative fodder.

Conclusion

The possibility of using this fodder for rabbits cannot be ruled out completely, because DM digestibility values of *S. auriculata* observed in the present study.

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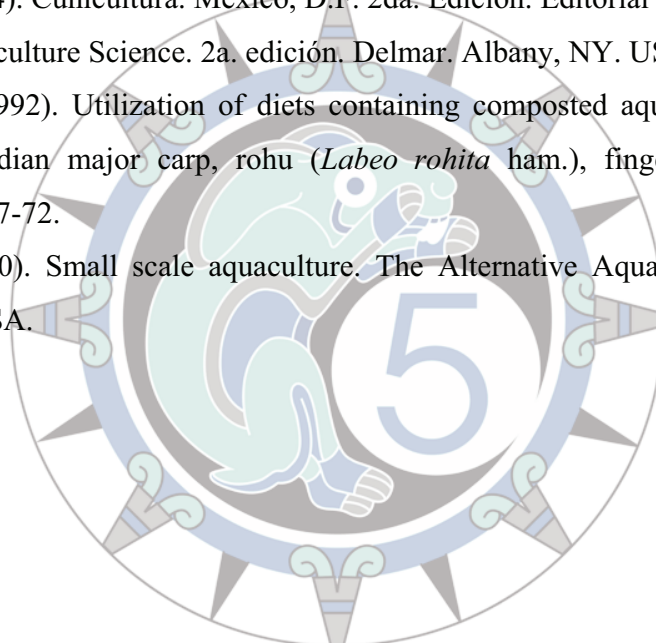
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