



Evaluation of the quality of protein in chia seeds

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Nowadays, chia seed has attracted attention due to its nutritional value. It is considered a great source of several components, such as protein⁽¹⁾. Each 100 grams of chia seed contains approximately 17 grams of protein, which corresponds to approximately 30% of the daily RDA for adults^(1,2). The aim of the current study was to evaluate the protein quality of white and black chia seeds, and their impact on the body weight gain (BWG) of rats, as a rich source of protein, because no other study has compared the quality of these two types of chia seeds.

In total, 30 male albino Sprague Dawley rats (aged 6 months), weighing approximately 190 ± 10 grams, were included. They were divided into 3 groups (10 in each): group 1: control, which were fed with a standard diet; group 2: fed with standard diet plus 20% black chia seeds; and group 3: fed with the standard diet plus 20% white chia seeds. The protein quality of chia seeds was evaluated by measuring the food efficiency ratio (FER), net protein ratio (NPR), true Digestibility (TD) and protein efficiency ratio (PER). The FER was calculated, based on the ratio between weight gain and total dietary intake of rats. The TD, PER and NPR was calculated according the equation used in a previous study⁽³⁾. Data were analyzed using IBM SPSS Statistics for Windows, version 23 (IBM Corp., Armonk, N.Y., USA). One-way analysis of variance (ANOVA) was used to compare the differences between the groups.

Group 2 showed a significant reduction ($p < 0.05$) in FER (0.16 ± 0.02), TD (69.43 ± 6.99), NPR (3.22 ± 0.64) and PER (1.73 ± 0.22), as compared to the controlled group FER (0.34 ± 0.04), TD (87.43 ± 4.10), NPR (4.51 ± 0.60) and PER (3.45 ± 0.49). In addition, Group 3 showed a significant reduction ($p < 0.05$) in FER (0.15 ± 0.03), TD (71.24 ± 5.87), NPR (3.31 ± 0.33) and PER (1.78 ± 0.26), as compared to the controlled group. However, there were no significant differences between both types of chia seeds, based on the mentioned parameters. In addition, group 2 and 3 gained more weight than the control group ($p < 0.05$).

In conclusion, both types of chia seeds are great sources of good quality protein, and they are effective in increasing body weight. However, the main limitation was a small number of animals used in the study.

1. Kulczynski A & Bartosz M (2019) *Nutrients*, **11**, 1242–1250.
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3. Silva M & Pereira B (2016). *Plant Food Hum Nutri* **71**, 225–230.