Physicochemical characterization of three bamboo species: Dendrocalamus asper, Bambusa tuldoides and Bambusa vulgaris, available in Unicamp

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Abstract

Young bamboo culm is a resource that could be more utilized, because sustainable exploration of clump is only possible if matured shoots and culms are taken. This study aimed to obtain and to characterize young bamboo culm flour of species Dendrocalamus asper, Bambusa tuldoides and Bambusa vulgaris for future food applications. Young culm were picked, cut in three parts ("bottom", "middle" and "top"), processed into flour and analyzed physicochemically. Data were obtained in triplicates and availed by difference among the parts of bamboo culm, by variance analysis (ANOVA) and Scott-Knott Test (p<0.05). It was observed protein, ash and lipid contents lower than 3g/100g, starch content between 1.84 and 17.75 g/100g, and fiber content between 64.36 and 93.51 g/100g. Additionally, it was found potential to fiber (D. asper and B. tuldoides) and starch (B. vulgaris) extraction.

Key words: bamboo, sustainability, dietary fiber.

Introduction

Brazil has 89% of all bamboo genus and 65% of all species known in America, and the most broadcast are Dendrocalamus asper, Bambusa tuldoides e Bambusa vulgaris12-4-5. There isn’t a productive systemic chain yet, but it can change since the sanction of Brazilian law nº 12.4824-2 which stimulate sustanbility of native formation and bamboo cultivation with focus on culm production, shoots extraction and environmental services. Young bamboo culm has a rich composition, and it could be used as an alternative to the market demand of fiber extraction.

Results and Discussion

Table 1 shows the results obtained for all the samples availed. All the analysis was made in triplicates, accorded to AOAC (1998) methodology1 and availed by difference among the parts of bamboo culm, by variance analysis (ANOVA) and by Scott-Knott Test (p<0.05).

Table 1. Physicochemical composition of young bamboo culm flour of each portion ("bottom", "middle" and "top") of species D. asper, B. tuldoides and B. vulgaris1.

All the samples had low contents of moisture1 (<10 g/100g) and protein1, ash1 and lipid1 lower than 3 g/100g, what were expected from the flour production processing. The samples also showed a high content of other carbohydrates (>67%), Specie D. asper had the highest values for total sugar1 (7-13%). Additionally, species D. asper and B. tuldoides presented the highest contents of fiber1 (77-93%), while starch contents1 (16-17%) were higher for specie B. vulgaris.

Conclusion

Young bamboo culm flour presents great potential for food application because of its high fiber and starch contents. Species D. asper and B. tuldoides showed potential for fiber extraction, while specie B. vulgaris for starch extraction.

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References


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