Effect of harvest, varieties and processing on nutritional composition and color of pecan nut [Carya illinoinensis (Wangenh) C. Koch] shell

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Healthful properties are attributed to pecan nut shells in south of Brazil where they are used for making tea. In this work the nutritional composition of the pecan nut shell powder of different harvestings (2009 and 2010), varieties (Barton variety – B, and a mix of different varieties - MV) and different processing (infusion and spray drying) were studied. Humidity, protein content, fat content, and minerals were determined according to the AOAC and crude fiber according to the AOCS methodology. Color was determined using the CIE Lab system. In the pecan nut shell powder the crude fiber content was from 44.7 to 49.7%, followed by carbohydrates (from 34.3 to 41.4%), humidity (from 7.9 to 11.8%), proteins (2.21 a 2.84%), ash (0.88 a 1.85%) and lipids (from 0.31 to 0.91%). In samples obtained by spray drying the carbohydrates were 95%, humidity 2.7%, ash 1.68 %, protein 0.43% and lipids 0.07%. The year of harvest has significantly influenced the fiber content, moisture, protein (MV2010 > MV2009 e B2010 > B2009), carbohydrates (MV2009 > MV2010 e B2009 > B2010) and lipid content (B2009 > B2010). The fiber and protein content were smaller and humidity and lipids content were higher for the Barton variety in the 2010 harvest. Minerals and lipids content were higher for mixture of varieties (2010 harvest). Color results showed values significantly higher for analyzed parameters in the spray dryer samples. The year of the harvest, variety and processing have significantly affected the nutritional composition and the color of the pecan nut shell.