P21. COMPARISON OF GAMMA RADIATION EFFECTS ON NATURAL CORN AND POTATO STARCHES AND MODIFIED CASSAVA STARCH

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There is increasing demand worldwide for starch as production of starch using products continues to grow. Starches from different botanical origin have different biosynthetic mechanisms and may exhibit distinct molecular structure and characteristics as well as diversity in granule shape, size, composition, and other constituents. Corn starch represents over 75% of the world's starch market. Potato starch is a very refined starch, containing minimal protein or fat. Cassava (or manioc) starch production in Latin America is located mainly in Southern Brazil. The production process for making starch from cassava is simple because cassava is a purer starch source than potato or cereals. Although native starches can be used as gelling agents in many gelling products depending on their source and availability, in many industrial utilizations physical and chemically modified starches are commonly used. The objective of this work was to evaluate the effect of gamma radiation on physicochemical starches properties of natural potato and corn starches and to compare with a typical Brazilian product, cassava starch modified through fermentation, and also to prepare composite hydrocolloid films based on them. Starches were irradiated with ^{60}Co in doses of 0 - 15 kGy, dose rate about 1 kGy/h. The viscosity of all starches aqueous preparations decreased as a function of radiation dose; maximum rupture force of the films, on the other hand, was affected differently for each starch. Color analysis showed that doses of 15 kGy promoted a slight rise in the parameter b* (yellow color) while the parameter L was not significantly affected. The results obtained also showed that the granule morphology and X-ray diffraction pattern remained almost unchanged by irradiation. Biochemical changes due to irradiation were detected using the vibrational spectroscopic technique Fourier transform infrared spectroscopy (FTIR). Significant differences were found in granule size distribution mainly for corn and manioc starch but the radiation did not cause significant changes in the thermal properties.