

Comparative study of XRD patterns of chemically treated, 6 MeV electron beam irradiated, 6 MV photon beam irradiated, and plasma exposed fibers of *luffa cylindrical*

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Abstract. This paper compares the effect of chemical treatment, 6 MV photon beam , 6 MeV electron beam and plasma exposure on the structural properties of fibers of *luffa cylindrical (LC)*, a common tropical fruit , rich in cellulose using X-ray diffraction pattern (XRD). There are no XRD peaks found in the spectra of photon beam irradiated LC fiber indicating complete destruction of cellulose crystallinity..Both crystalline and amorphous cellulose are detected in the XRD patterns of electron beam irradiated, plasma irradiated and chemically treated LC fibers. Crystallite size, percent of crystallinity are evaluated in the treated LC fiber.

Keywords- Cellulose; electron beam; photon beam; medical LINAC

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