Capsicum pepper is grown, not only for aroma, flavor and pungency, but because of its high nutritional and functional value. Despite its nutritional and economic importance in Brazil and the world, conservation techniques of fresh chilli and its sub-products have been little investigated. The study evaluated the effect of irradiation on the quality and conservation of Dedo-de-Moça (*Capsicum baccatum* var. *Pendulum*) pepper pulp. Freshly harvested fruits were selected, weighed, cleaned, crushed, packaged, treated by $^{60}$Co gamma radiation (0.0, 2.0 and 3.0 kGy doses) and stored at a temperature of 25 °C. The samples were analyzed at 1, 15, 30 and 60 days of storage, and contamination by mesophilic aerobic and physicochemical characteristics (soluble solids-SS, pH and color). The results showed that only the 3.0 kGy dose inhibited the contamination of the pulp within 60 days of storage. All samples showed an increase in pH up to 35 days (4.93 to 5.17), returning to the initial values in 60 days. The levels of SS were reduced gradually during storage (from 9.97 to 7.33), except the 2.0 and 3.0 kGy samples have not shown any statistical difference. After time, an increased intensity of red color in all doses was noticed, except for the sample irradiated with a 2.0 kGy dose. The 3.0 kGy dose proved to be effective for preservation of the pulp without causing considerable losses in physical and chemical characteristics.