Tamarindus indica (tamarind) is an established traditional medicine. Pulpa tamarindorum includes vitamin C, protein, fat, glucose, citric acid, etc. Citric acid is a root canal irrigant and vitamin C an antioxidant. This study aimed to elucidate the cytotoxicity of 5% tamarind extract as a root canal irrigant to the cell line BHK-21. Eighteen cultures of cell line BHK-21 were divided into 2 groups. Sterile aquabidest was placed on the group 1 cultures (as control), and 5% tamarind extract was on the group 2, for 2.5 minutes each, and then the percentage of the living and dead cells were counted. The collected data were statistically analyzed by using independent t test to 0.05 limit of significance. The results showed 1% of dead cells in group 1 and 22% in group 2, and that there was a significant difference between the effect of 5% tamarind extract and that of sterile aquabidest (p<0.05). It was concluded that 5% tamarind extract is cytotoxic to the cell line BHK-21.