Abstract

In this study, we developed a bioassay to quantify the ricin toxin content of castor bean (Ricinus communis L.) seeds. Existing quantification methods do not always reflect actual toxicity of the seeds analyzed, which may present lower ricin content even though they are more toxic than seeds presenting a higher content of ricin. This is because these methods actually measure the addition of ricin RCA, which is a compound less toxic than pure ricin. We decided to use in this study, the nematode Caenorhabditis elegans, which has been widely used by the pharmaceutical industry. We tested two strains of C. elegans using different methods in 8 experiments. We examined 4 methods of extracting the ricin complex and 3 methods of exposing the nematodes. Among the nematode strains and ricin extraction methods tested, we concluded that the best strain for testing ricin toxicity was the strain called N2 and that the best method for ricin extraction was a rotating bath followed by centrifugation and exposing the nematodes in 24 well plates with a solution of nematodes extracted from the media with destilated water exposing the nematodes in 24-well plates. This method is inexpensive, quick and adequate for the selection of offspring with lower RIP content.

Keywords

Toxin, C. elegans, selection, Ricinus.