EVALUATION OF AN IN VITRO BIOASSAY FOR THE DETECTION OF RICIN IN CASTOR BEAN CAKE

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Ricin is a toxic lectin which presents a potential security threat. Its rapid detection is highly desirable. Current methods for the detection of ricin consist of eletrophoretic identification or immunoassays, which may not be indicative of a biologically active molecule. An in vivo assay, such as a mouse bioassay, can indicate the biological activity of the toxin; however, this method is not feasible for laboratories that do not have animal testing facilities. The purpose of this study was to develop an in vitro assay for the detection of biologically active ricin in castor meal. Castor meal were grounded and proteins were extracted with phosphate buffered saline (PBS). Adherent Vero cells maintained in culture flasks were detached from the flasks by treatment with trypsin (0.5 mg/ml)/EDTA (0.2 mg/ml) in PBS for 5 min at 37 °C. Detached cells suspended in the growth medium at density of 2×10^4 cells/ml and incubated at 37 °C for 36h. Crude castor cake protein pool was tested at concentration of 10µg/mL (Brzezinski & Craft, 2007). The mean number of untreated and treated cells was determined by the examination of at least 600 cells in the same monolayer, at a magnification of x 400. Our results showed a considerable decrease of cell growth after 24 hours when crude cake was used . To confirm cell death, the supernatant was tested for lactate dehydrogenase (LDH) activity with a colorimetric assay.

Supported by FINEP, FAPERJ and CNPq
Keywords: Ricin, castor cake, bioassay, Vero cells