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Antiviral activity of *Cassia alata* extracts against cardiac Coxsackievirus B3 infections *in vitro* and *in vivo*

Mohamed Nasr Fathi Shaheen[1], **Maria Borsanyiova**[2], **Sami Mostafa**[1], **Shubhada Bopegamage**[2] and **Nagwa El-Esnawy**[1]
[1]National Research Center, Egypt
[2]Slovak Medical University, Slovak Republic

Coxsackievirus B3 (CVB3) represents current major threats to public health and considers as an important viral pathogen related to viral myocarditis. We determined the antiviral properties of five extracts of *Cassia alata* leaves *in vitro*. The most potent extract was selected to be tested *in vivo*. *In vitro*, the cytotoxicity effect of the extracts on GMK cells was conducted by MTT colorimetric assay. The antiviral activity of the extracts was determined in three different ways (virucidal, pre-treatment and post-treatment) by MTT and 50% tissue culture infectious dose ($TCID_{50}$) methods. *In vivo* after toxicity determination, the antiviral activity of the selected extract using two safe doses was evaluated based on determination of the morbidity, mortality, heart to body weight ratio (HW/BW), activities LDH, AST and CK enzymes, virus titers and necrosis in heart tissues in infected mice with CVB3. Our results demonstrated that the all extracts of *C. alata* showed antiviral activity against CVB3 *in vitro* with TI ranged from 0.2 to 12.2 and reduction in virus titers ranged from 0 $\log_{10}$ to 2.5 log10 where the methanolic extract was the most effective against CVB3 infection *in vitro*. *In vivo*, the methanol extract was found to be safe at 100 mg/kg body weight and therefor for antiviral evaluation we used 100 and 50 mg/kg body weight as safe doses. Our results suggested that the methaolic extract of *C. alata* was significantly reduced the morbidity, mortality, HW/BW, virus titers, necrosis and mononuclear cell infiltration of heart tissues at the both dosages. Also the extract showed the ability to maintain levels of LDH, AST and CK enzymes at normal level in the treated infected mice compared with those untreated infected mice. This result suggested that the methaolic extract of *C. alata* may represent a potential antiviral agent to treatment CVB3 myocarditis.

Biography

Mohamed Nasr Fathi Shaheen has completed his PhD from Al-Azhar University in Applied Virology. He has more than 8 years' experience in the field of Virology. He has published more than 9 papers in peer-reviewed journals.

m_nrc2007@yahoo.com

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