Seed germination of Cassia angustifolia (Senna) under *in vitro* and *in vivo* conditions

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Abstract

This experiment was conducted with the aim of studying the germinating ability of Senna by evaluating the germination percentages and survival rates of seeds in different media with time, under in vivo and in vitro conditions. A set of seeds were surface sterilized either using four different concentrations of Clorox (Sodium Hypochlorite–NaOCl) (5%, 10%, 15% and 20%) with four different exposure time durations (5,10, 15 and 20 minutes), 50% ethanol for 1 minutes or 70% ethanol for 2 minutes. After an over night soaking seeds were established on MS (Murashige and Skoog's medium, 1962), WPM: McCown's Woody Plant Medium (Lloyd and Mc Cown, 1981) and Anderson medium (Anderson, W.C. 1984) with and without adding 1g/l activated charcoal. Seeds were established in vivo in trays having sand, coir dust and sand: coir dust mixture at 1:1 ratio in a plant house. Data were collected in weekly intervals and analysed using SAS computer software package.

Results revealed that concentrations of Clorox and exposure time minimized contaminations as 100% survival rates for seeds were obtained both with 5% Clorox with 20 minutes exposure time and 20% Clorox with 5 minutes exposure time after four weeks. However lower concentrations of Clorox and longer exposure time facilitated germination where 83.33% germination was obtained only from 5% Clorox with 20 minutes exposure time, while germination reduced to 33.33% with 20% Clorox with 5 minutes exposure time. WPM activated charcoal free medium showed highest (87.5 %) germination percentage. Application of activated charcoal to culture media had no effect on germination. After eight mont hs, in vitro germinated plantlets were transferred to polybags containing sand: top soil: cow dung 2:1:1 ratio and placed under shaded conditions in a plant house where 75% plants survived. In vitro germinated plants introduced to plant house were free from pest and diseases. After four weeks 40% germination was observed in seeds sown in sand tray under in vivo conditions. However, due to leaf eating caterpillar damage, survival rate was reduced to 20% after 5th week. Remaining plants were introduced to polybags. Growth performances of in vitro derived plants have to be evaluated. In vitro plantlets can also be used to develop a micro propagation protocol for Senna.

Five percent Clorox with 20 minutes exposure time could be used for surface sterilization of Senna seeds. Cassia angustifolia can be successfully propagated using in vitro techniques, while minimizing the pest and disease problems to get maximum survival rate during the immature stages of growth.

Keywords: Cassia angustifolia, Senna, Surface sterilization