



Production of Serine Protease Inhibitors from *Momordica dioica* Cell Cultures

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ABSTRACT: Protein molecules which bind and inhibit the activity of serine protease enzymes are known as serine protease inhibitors. These are proteolytic enzymes which possess triad of aspartic acid, histidine and serine in their active site. They take part in a variety of physiological processes like protein digestion in intestine, blood clotting, muscle contraction etc. They have been found in microbes, plant tissues, animal tissues and fluids and insects. In plants, they play a vital role in defense mechanism against predators and pathogens. Serine protease inhibitors are mostly detected in seed extracts. Callus cultures of *M. dioica* were established from various explants which were obtained from *in-vitro* as well as *in-vivo* growing plants. *M. dioica* seedlings were developed under *in-vitro* condition through germination of stored seeds on water agar medium. Sixty percent germination was achieved. Leaves obtained from outdoor grown plants were proved to be the best explants for callus formation with 60% rate of callus induction. Protein profile of callus and media samples was analyzed through SDS-PAGE and two proteins were found to be similar and expressed in seeds also along with several others. Trypsin inhibitory activity was measured and found to be positive in callus and media samples. Higher level of inhibition (91%) was achieved in callus extract as compared to media samples (54%). Since trypsin inhibitory activity was also observed in the protein extracted from the medium, it is believed that the protein involved is extracellular. Therefore, the work will be extended towards the establishment of suspension cultures. © 2014 iGlobal Research and Publishing Foundation. All rights reserved.

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