ABSTRACT

Plumbago indica Linn. is a Thai medicinal plant used in indigenous practice. Active principle in the roots is plumbagin, a naphthaquinone derivative. Plumbagin has the activity against bacteria, fungi, and protozoa and also has the properties of antimutagenicity and tumor regression. Nevertheless, the important problems in natural production of plumbagin are 1) it can be obtained only from the roots and 2) the roots containing high content of plumbagin must be 2-3 years old. In the present study the tissue culture technique is used to increase plumbagin content in a short period. The aims of this research are 1) to induce callus from leaves of *Plumbago indica* Linn., 2) to induce plantlets from callus of *Plumbago indica* Linn. and 3) to compare the plumbagin content between in callus and natural *Plumbago indica* Linn. The optimum condition for surface sterilization of leave was washing with 0.4% Antracol® 25 minutes, 5% Clorox® 5 minutes and 5% Clorox® 8 minutes. Each step was washed with sterile water 5 minutes 5 times. The middle leave with midrib was the optimum position to induce callus. The best medium to induce callus was Modified MS with 3.0 mg/l 2,4-D, whereas there was no proper medium to regenerate plantlets from callus. Plumbagin content in each part of *Plumbago indica* Linn. were 138.27 mg% in root, 1.03 mg% in stem, 0.13 mg% in branch and 0.63 mg% in leaf and *Plumbago zeylanica* Linn. were 42.28 mg% in root, 10.72 mg% in stem, 14.96 mg% in branch and 4.18 mg% in leaf. The content in callus of *Plumbago indica* Linn. was 0-2.98 mg% and *Plumbago zeylanica* Linn. was 0.23-8.61 mg%. Consequently, root of *Plumbago indica* Linn. is the important source of plumbagin in nature while callus of *Plumbago zeylanica* Linn. is an alternative source. However, this study could be continued to select the proper medium, hormone and elicitor for high production of plumbagin, or used other plant tissue culture techniques for high efficient production.