Factors affecting the accumulation of 9-methoxycanthin-6-one in callus cultures of Eurycoma longifolia.

ABSTRACT

A study was conducted to improve 9-methoxycanthin-6-one productivity (potential anti-tumour compound) from callus cultures of Eurycoma longifolia (Tongkat Ali). Several factors affecting 9-methoxycanthin-6-one production in callus cultures such as different medium compositions and physical factors were investigated and analyzed. Results show that a higher production of 9-methoxycanthin-6-one (3.84 mg'g-1 DW (Dry Weight)) is obtained from callus cultured in ¼ MS basal media. At fructose of 2% (w/v), the production of 9-methoxycanthin-6-one (4.59 mg'g-1 DW) is promoted to gain the highest yield, compared to other carbon sources tested. The addition of 2.0-mg'L-1 dicamba also increases 9-methoxycanthin-6-one production (12.3 mg'g-1 DW). Higher production of 9-methoxycanthin-6-one was obtained at pH 5.5 (1.53 mg'g-1 DW). Production of 9-methoxycanthin-6-one (2.34 mg'g-1 DW) in callus cultures is also increased when the medium is added with 1×10-1 μM phenylalanine. This study suggests that the successful production of 9-methoxycanthin-6-one in vitro cultures has a potential in large-scale production using bioreactor technology.

Keyword: Eurycoma longifolia; Callus culture; 9-methoxycanthin-6-one; Dry weight.