



Synthesis of 7-hydroxy-4-chloromethyl coumarin grafted with indole-3-butyrlic acid

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Indole-3-butyrlic acid (IBA) is a plant hormone. IBA is a white to light-yellow solid. It used to initiate root formation, increase rooting and root length. However, in case of high concentration of IBA, it affected to other parts of the plant resulting no effects to the root. Therefore, to enhance the effect to root of plants, the amount of IBA have to control do not exceed the higher limit as well as controlled release. Because of the photon controlled drug delivery of coumarin derivatives, 7-hydroxy-4-chloromethyl coumarin was grafted with IBA. 7-hydroxy-4-chloromethyl Coumarin grafted with IBA is use for agriculture to be plant growth regulator, it can control release of IBA. Light will break down the bond between coumarin and IBA then IBA will release into soil. 7-hydroxy-4-chloromethyl coumarin grafted with IBA is a model for synthesis of coumarin derivatives grafted with other plant hormones.

In this study, the effects of reaction parameters on the grafting yield was investigated. Reaction parameters will be study are temperature of reaction (50 - 65°C), time of reaction (1 - 5hrs.), mole ratio and crystallization time (1 - 4days).

Potassium carbonate, potassium iodide and 7-hydroxy-4-chloromethyl coumarin were dissolved in dimethylformamide as solvent. Then IBA was added to the solution as desired temperature and time. Product is light yellow solid and insoluble in water. The product yield was decreased when the temperature exceeds 60 °C. The optimum temperature to give the highest yield at 72 % yield was 55 °C.

Keywords: Coumarin, Indole-3-butyrlic acid, IBA, release control, plant hormone