

SORNSOME NAWASALAO : A STUDY OF RADIOACTIVE NICOTINE SYNTHESIS
FROM NICOTIANA TABACUM CALLUS CULTURES. THESIS ADVISOR : Asst.
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A study of radioactive nicotine synthesis was conducted. Callus tissue without organogenesis, derived from the sterilized stem of Nicotina tabacum L. cv. Kentucky 14 was incubated with nicotinic acid H - 3 prepared by irradiation of nicotinic acid and lithium salt with neutron. The Murashige - Skoog (M&S) medium containing $1\mu\text{M}$ α - naphthalenacetic acid (NAA) and $1\mu\text{M}$ kinetin, pH 5.7 was used. The culture was done at $25\pm 2^\circ\text{C}$ with relative humidity of 30-40 % in the darkness. The production of nicotine has been prepared by a two-packed batch and continuous flow system. The nicotine synthesis by batch culture was found to give higher yield than that of synthesis by continuous flow culture for the culture period of 6 weeks. The maximum accumulation of nicotine H - 3 in the experiment was 1.15 mg./30 ml. of M&S medium. Not more than 7.14 % of the nicotinic acid precursor was found. The purity of nicotine H - 3 was 72.79 %. No gamma and other radioisotope except tritium was found in the prepared nicotine H - 3. The specific activity of the product was 1.18×10^{-5} Ci/mg. of nicotine and considered to be high enough to be used as a radioactive tracer.