

ABSTRAK

SINTESIS ASAM NIKOTINAT DARI ISOLAT NIKOTIN DAUN TEBKAU (*Nicotiana tabacum L.*)

Asam nikotinat memiliki kesamaan gugus fungsi dengan nikotin yakni adanya gugus piridin, sehingga dapat dilakukan sintesis asam nikotinat dengan mengkonversi gugus fungsi pada nikotin. Penelitian ini bertujuan untuk mensintesis asam nikotinat (vitamin B3) dari nikotin daun tembakau. Sintesis asam nikotinat dilakukan dengan tiga tahapan, yaitu ekstraksi nikotin dengan metode soxhletasi menggunakan pelarut etanol 96%; isolasi nikotin dengan metode partisi cair-cair; dan sintesis menjadi asam nikotinat dengan metode oksidasi. Hasil ekstraksi nikotin diperoleh rendemen sebanyak 39,65%. Ekstrak diisolasi dengan pelarut etil asetat, diperoleh rendemen nikotin sebanyak 5,38%. Hasil GC-MS ekstrak menunjukkan adanya nikotin murni sebesar 4,98% dalam ekstrak. Asam nikotinat berhasil disintesis dengan oksidasi menggunakan KMnO_4 hingga diperoleh rendemen sebanyak 45,87%. Karakteristik FT-IR isolat nikotin terkonfirmasi keberadaan gugus C-H alifatik sebagai dasar gugus pirolidin, lalu adanya C=N, C=C, dan C-H *Out-of-Plane Bending* sebagai dasar gugus piridin. Karakteristik asam nikotinat hasil sintesis terkonfirmasi keberadaan gugus O-H dan C=O sebagai gugus pembangun senyawa karboksilat, lalu adanya C=N, C=C, dan C-H *Out-of-Plane Bending* yang merupakan ciri khas gugus piridin.

Kata-kata kunci: asam nikotinat; metode oksidasi; nikotin; sintesis



ABSTRACT

SYNTHESIS OF NICOTINIC ACID FROM NICOTINE ISOLATES IN TOBACCO LEAVES (*Nicotiana tabacum* L.)

Nicotinic acid has a functional group similar to nicotine, namely a pyridine group, so that nicotinic acid can be synthesized by converting the functional group in nicotine. This study aims to synthesize nicotinic acid (vitamin B3) from tobacco leaf nicotine. The synthesis of nicotinic acid was carried out in three stages, namely nicotine extraction using the Soxhlet method with 96% ethanol solvent; nicotine isolation using the liquid-liquid partition method; and synthesis into nicotinic acid using the oxidation method. The nicotine extraction yielded a yield of 39.65%. The extract was isolated with ethyl acetate solvent, yielding a nicotine yield of 5.38%. GC-MS analysis of the extract showed the presence of 4.98% pure nicotine in the extract. Nicotinic acid was successfully synthesized by oxidation using KMnO_4 , yielding a yield of 45.87%. The FT-IR characteristics of the nicotine isolate confirmed the presence of aliphatic C-H groups as the basis of the pyrrolidine group, followed by the presence of C=N, C=C, and C-H Out-of-Plane Bending as the basis of the pyridine group. The characteristics of the synthesized nicotinic acid confirmed the presence of O-H and C=O groups as the building blocks of carboxylic compounds, followed by the presence of C=N, C=C, and C-H Out-of-Plane Bending, which are characteristic of pyridine groups.

Keywords: nicotine; nicotinic acid; oxidation method; synthesis

