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DISCOVERY OF 2, 3-SECO PLEIOCARPAMINE TYPE MONOTERPENE INDOLE ALKALOID (MIA) FROM RHAZYA STRICTA

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Recently much attention has been paid to the drug resistance for antibiotics. Natural products are the productive resource for development of drug candidates. Medicinal plants of family Apocynaceae has proven a watershed for unique and active alkaloids like ajmalicine, yohimbine, camptothecin, ajmaline, quinine, and rhazinilam as a result of astonishing and interesting biosynthetic pathways. Recently, secopleiocarpamine A betokens a novel 2, 3-seco pleiocarpamine type monoterpene indole alkaloid (MIA) dominating a cyano group has been isolated from Rhazya stricta. Considering secopleiocarpamine A, demonstrating a novel 2, 3-seco pleiocarpamine type alkaloid possessing a cyano group, a plausible biosynthetic pathway was proposed from pleiocarpamine, which on [1,3]-hydride shift led to the formation of intermediate i. Intermediate ii was produced as a result of the oxidative cleavage of i, which on nucleophilically attack by a cyanide ion afforded iii. After subsequent dehydration and hydrogenation, the intermediate product iii has given 2, 3-seco pleiocarpamine. A distinctive anisotropic effect strongly suggested that the N-methine was directly linked with a triple bond (C C or C N). However, the characteristic IR absorption band of the cyano group in the region 2100–2300 cm^{-1} was absent, which may be due to the introduction of electronegative groups, particularly those containing oxygen, into the molecule resulting in the quenching effect of the nitrile stretching frequency. The relative configuration of 2, 3-seco pleiocarpamine was determined by the NOE correlations and $^{1}H-^{1}H$ coupling constant analysis. It was screened for biological activity against bacterial and fungal strains. However, IC_{50} was not found convincingly impressive. However, its unique structural arrangement has given a new touch stone to the cascade of monoterpene indole alkaloids from Rhazya stricta.

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