Discovery of 2, 3-seco pleiocarpamine type monoterpene indole alkaloid (MIA) from *Rhazya stricta*.

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Abstract

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 betoken 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. 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*.

Keywords— *Rhazya stricta, Apocynaceae, Pleiocarpamine, Cyanide ion.*

Professional Biography

Dr. Abrar Ahmed has recently earned his PhD degree entitled “The chemical constituents from three medicinal plants (*Rhazya stricta*, *Mahonia fortunei*, *Cephalotaxus sinensis*) and their antimicrobial activity” at the age of 28 from Sun Yat-Sen University, Guangzhou China. During his PhD research, he mainly worked on identification of chemical leads from tropical flora for antimicrobial efficacy which in future, may lead to the development of new drug candidates against complex and challenging antimicrobial drug targets. He has published 2 research papers as first author and 6 as co-author in peer reviewed reputed journals during his PhD. To expand his expertise from the field of Natural chemistry, he is now looking for highly challenging cutting edge research projects. Being fresh PhD, he is extremely excited to peruse his post-doctoral research.



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Any Comments: