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Enantioselective Total Syntheses of Xiamycin-A and (+)-Japonicol C

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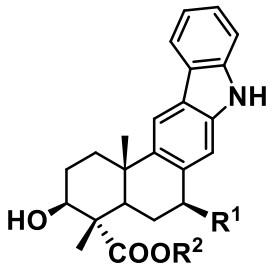
Abstract:

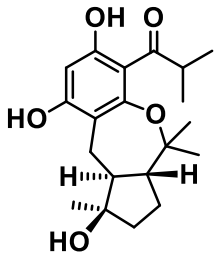
The enantioselective total synthesis of Xiamycin A, D and Japonicols will be presented. Indolosesquiterpenoids, Xiamycin A, D were isolated from *Streptomyces.* It shows antiviral properties against herpes simplex virus–1 (HSV-1). Total synthesis of pentacyclic marine indolosesquiterpenoids has been acheived from an enantiopure Wieland-Miescher ketone derivative in concise manner. The key steps involved in synthesis are Pd catalysed sp^3 C-H activation, diastereoselective Michael addition and 6π-electrocyclization/aromatization.

In 2016 Hu *et al* isolated (±) Japonicols A-D, acylphloroglucinol based meroterpenoids. Japonicols have shown moderate anti-KSHV activity. The enantioselective total synthesis of (-)-Japonicol C has been developed for first time, which features a Lewis acid catalysed Friedel-Crafts reaction for one-pot C-C and C-O bond formations resulting in the construction of tricyclic core of meroterpenoid followed by regio- and stereoselective C-H oxidation.

Figure:



$R^1 = R^2 = H$, Xiamycin A
$R^1 = OH$, $R^2 = Me$, Xiamycin D



(-)-Japonicols C

References and Notes:

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Bio-Sketch of Speaker

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Dattatraya Dethe obtained Ph.D. in synthetic organic chemistry from Indian Institute of Science, Bangalore in 2005. He subsequently held postdoctoral position in Prof. K.C. Nicolaou's group from 2005-2008. He then joined as a senior scientist in a drug discovery firm Albany Molecular Research Inc. at Singapore. He then returned back to India and joined National Chemical Laboratory, Pune as a Scientist-E1 from Aug 2009. Later in Dec 2011 he moved to IIT Kanpur and currently working there as Professor in the department of chemistry.

His research interests include biomimetic total synthesis of natural products, development of metal catalysed new C-C and C-X bond forming reactions.

He is a recipient of CSIR young scientist award in Chemical Sciences (2011), OPPI young scientist award (2011), AVRA young scientist award (2014) and he was also young associate of Indian Academy of Sciences, Bangalore. He is also recipient of CRSI bronze medal 2020 and SERB-STAR award 2020.