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Office of the Principal
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Memo No. 16/MGC **Date: 06/01/2022**

To Whom It May Concern

This is to certify that Dr. Debasish Kundu, Assistant professor in Chemistry of Government General Degree College, Mangalkote is doing Collaborative Research with Dr. Shyamal Kumar Jash, Associate Professor of Chemistry, Hetampur Krishna Chandra College from 2022. This Collaboration has furnished significant scientific address, festering a productive relationship between the two Institutions.

Their Collaborative effort has created several opportunities of publications in the field of "Natural Product Synthesis and Nanocatalysis". I hope that their collaborations remain as dynamic with several more projects in the pipeline those are going to serve mankind and also be published in near future in prestigious international journals.

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To Whom It May Concern

This is to certify that Dr. Shyamal Kumar Jash, Associate Professor of Chemistry, Krishna Chandra College, Hetampur, Birbhum is doing Collaborative Research with Dr. Debasish Kundu, Assistant professor in Chemistry of Government General Degree College, Mangalkote from 06.01.2022. This Collaboration has furnished significant scientific address, festering a productive relationship between the two Institutions.

Their Collaborative effort has created several opportunities of publications in the field of "Natural Product Synthesis and Nanocatalysis" and they have already communicated a book chapter together. I hope that their collaborations remain as dynamic with several more projects in the pipeline those are going to be published in near future.

ESTD.-1897

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Principal
Krishna Chandra College
Hetampur, Birbhum

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CHAPTER 3

Progress in the Research of Naturally Occurring Biflavonoids: A Look Through

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Abstract: Biflavonoids are dimers of monomeric flavonoids and have reported to exhibit several pharmacological activities, like anti-microbial, anti-inflammatory, anti-enzymatic, antioxidant, anticancer, anti-Perkinson, anti-ulcer, anti-hypertensive, anti-diabetic, anti-depressant and anti-protozoan. Extensive research work on this important segment of natural compounds is in progress. In this chapter, we report the progress of research on natural biflavonoids from the period of 2005 to early 2020; it includes enlisting newly isolated bioflavonoids from plant sources, biological activities exhibited by the known as well as new compounds and synthetic strategies developed for synthesizing such compounds. In this time period, a total of 247 biflavonoids have been reported either in terms of their first-time appearance or evaluation of their biological activities or both. Out of the reported 247 biflavonoids, 176 have been reported as new compounds from natural plant sources. They have been reported to exhibit a wide range of biological and pharmacological properties, including anti-microbial and antiviral, cytotoxic and anti-cancer, anti-diabetic, anti-anoxic, antioxidant, NO-inhibitory activity, anti-enzymatic, anti-HIV, anti thrombin, anti-allergic, cytoprotective, neuroprotective and anti-inflammatory, which have been discussed in a comprehensive manner. Different synthetic strategies that have been reported for the synthesis of structurally different biflavonoids are also included. This chapter cites 177 references.

Keywords: Anti-cancer, Anti-diabetic, Anti-enzymatic, Anti-microbial, Antioxidant, Antiviral, Biflavonoids, Biological activities, Cytotoxic, Natural distribution, Nomenclature, Occurrence, Structural aspects, Synthesis.

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Atta-ur-Rahman (Ed.)