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NH-52, Chandigarh Road, Hisar (Hry.)
Contact No. 86078-99999, 82550-99999
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Email : info@osgu.ac.in

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SYNTHESIS AND CHARACTERIZATION OF (E)-2-HYDROXY-5-((4-HYDROXYBENZYLIDENE) AMINO)BENZOIC ACID AND THEIR METAL COMPLEXES

Munni Lal¹, Sanjeev Sharma¹ and Niranjan Singh Rathee²

¹School of Applied Sciences, Om Sterling Global University Hisar, Haryana

²Department of Sciences, Jagannath University, Bahadurgarh, Haryana

Abstract:

Schiff bases are the compounds which include imine or azomethine as a functional group. They contain a double bond between carbon and nitrogen (-C=N-). These can be prepared by the condensation of primary amines with carbonyl compounds. Schiff bases have multiple applications ranging from medicinal use, industrial purposes, catalytic activity and contribution as ligands in coordination compounds. Keeping the above points in view, some new Schiff bases have been synthesized using 4-hydroxybenzaldehyde and 5-aminosalicylic acids. The resultant compounds were found to be (E)-2-hydroxy-5-((4-hydroxybenzylidene)amino) benzoic acid. They have been purified and characterized for molecular weight, elemental composition, melting point etc. Their structures have been established using FT-NMR and IR. The synthesized compounds have been evaluated for their complexation properties and found that synthesized compounds have great chelation activities with several transitional metals. Their complexes have been synthesized by convenient methods and have been characterized in similar manner. Stoichiometry of the complexes has been evaluated using classical methods such as Vosberg-Cooper Method, Mole Ratio Method and Slope Ratio Method.

Keywords: Synthesis, characterization, Schiff base, Complexes

ADVANCES IN INDUSTRIAL MICROBIOLOGY

Pinaj¹, Charu Yadav²

¹Department of Biotechnology, Chaudhary Devi Lal University, Sirsa, Haryana

²Department of Biotechnology, Sharda University, Greater Noida, Uttar Pradesh

Abstract:

Innovations in industrial microbiology have transformed bioprocesses across various industries, with advancements in microbial strain manipulation, bioreactor architecture, and process refinement leading to increased efficiency and sustainability. Novel biocatalysts and biotransformation routes allow for the creation of intricate chemicals and pharmaceuticals. Additionally, progress in metabolic engineering and synthetic biology supports the generation of biofuels and bioplastics from sustainable sources, reducing environmental harm. High-throughput screening methods and omics technologies allow for rapid identification and characterization of industrially relevant microorganisms and their metabolic capabilities. The transformative impact of meta-omics in driving innovation and sustainability in industrial microbiology, offering unparalleled insights into microbial communities behavior and their exploitation for diverse industrial biotechnological applications. The incorporation of artificial intelligence and machine learning optimizes bioprocess parameters, boosting both product yield and quality. Moreover, progress in downstream processing techniques simplifies purification and recovery procedures, resulting in cost savings and minimized waste production.

WOUND HEALING PROPERTIES OF CHROMOLAENA ODORATA EXTRACT CREAM

Okeke Chukwunweike¹, Abdu Josephine¹, Ariahu Emmanuel¹ and Alfa John¹,

¹Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmaceutical Sciences, Bingham University, Karu Nasarawa, Nigeria.

Abstract:

In many Nigerian and other African cultures, medicinal plants and herbs have been utilized in folklore medicine for wound healing and are largely preferred due to their effectiveness, limited toxicity, widespread availability and affordability. This study is aimed at adding value to the wound healing effectiveness of Chromolaena odorata as claimed in the folkloric medicine. The bioactive compounds from Chromolaena odorata leaves were extracted using methanolic cold maceration. Thereafter, an oil-in-water herbal cream was formulated by incorporating the Chromolaena odorata extract into an oleaginous base at two different extract concentrations – 5% w/w cream (5% CO Cream) and 7% w/w cream (7% CO Cream). The physicochemical properties as well as the wound healing effects of the creams were evaluated. Both herbal cream formulations had dark green colour, good homogeneity, smooth consistency, and good stability. They also showed no allergic reaction following skin irritation test and had excellent wash-ability. The wound healing effect is concentration dependent; the 7% CO Cream decreased the incised wound surface area faster than the 5% CO Cream. The 7% CO Cream was also more effective than the comparator, Sudo-Cream (positive control).

Keywords: Chromolaena odorata, wound healing, herbal cream, drug delivery.