Synthesis and biological evaluation of some bicyclic [2-(2,4-dimethylphenylthio)phenyl] aniline and its amide derivatives as potential antitubercular agents

Yogesh Patil, Ramesh Shingare, Shakti Chakraborty, Rachana Borkute, Dhiman Sarkar and Balaji Madje

A series of bicyclic [2-(2,4-dimethylphenylthio)phenyl] aniline analogues were synthesized. All the newly synthesized 15 compounds were inspected for their in vitro antitubercular activity against *Mycobacterium tuberculosis* (MTB) H$_3$Ra in both active and dormant state using an established XTT Reduction Menadione assay (XRMA).

Synthesis and biological evaluation of 3,6-dialkylsubstituted-[1,2,4] triazolo[3,4-b][1,3,4]thiadiazoles

Vijayendar Venepally, K Sirisha, C Ganesh Kumar, E Vamshi Krishna, Sunil Misra and Ram Chandra Reddy Jala

A series of 3, 6-dialkyl triazolothiadiazole analogues were prepared using undecenoic acid, which is the renewable product of castor oil and evaluated them for their antimicrobial and cytotoxic activities. A few compounds showed good antimicrobial and cytotoxic activities.

Protonation of the imino nitrogen deactivates the excited state of imidazolin-5-one in the solid state

Ashish Singh, Khalid Badi-Uz-Zama and Gurunath Ramanathan

The imino nitrogen of *p*-methoxybenzylideneimidazolinone (*p* MBDI) was protonated and crystallized in monoclinic crystal system with *P*$_2_1$/n space group. Interestingly, the protonation at imino nitrogen of imidazolinone ring results in the loss of the fluorescence property of *gfp* chromophore analogue (*p*-methoxybenzylideneimidazolinone).
Regular Article

A novel Mn(II) oxalato-bridged 2D coordination polymer: synthesis, crystal structure, spectroscopic, thermal and magnetic properties

Hiba Sehimi and Mohamed Faouzi Zid. 25

A new 2D polymeric oxalate-based Mn(II) salt has been synthesized by slow evaporation at room temperature and its structure has been determined by single-crystal X-ray diffraction. The crystal structure is built from anionic, two-dimensional, honeycomb networks formed by the oxalate-bridged Mn(II) ions, interleaved by 2,6-diaminopyridinium cations that are entrapped between the layers.

Regular Article

Gentisate-1,2-dioxygenase activity by an iron(II)-phenanthroline complex

Abhranil De, Dhananjay Dey, Ajit Das, Niranjan Kole and Bhaskar Biswas. 26

A mononuclear iron(II) phenanthroline complex exhibits significant catalytic activity towards oxidative cleavage of 2,5-dihydroxy benzoic acid at a rate, $k_{obs}(\text{min}^{-1}) = 6.58 \times 10^{-3}$ which predominantly produced 2-oxo-4-hydroxy-hepta-3,5-dienedioic acid upon addition of 2,5-dihydroxybenzoic acid in the presence of molecular oxygen.

Regular Article

Non-oxidative methane dehydroaromatization reaction over highly active $\alpha$-MoC$_{1-x}$ ZSM-5 derived from pretreatment

Pradeep Kumar Budde, Arvind Kumar Singh and Sreedevi Upadhyayula. 27

The catalytically active $\alpha$-MoC$_{1-x}$ phase over 15% Mo-HZSM-5-A is more immune to coking than $\beta$-Mo$_2$C phase over 15% Mo-HZSM-5-B and 15% Mo-HZSM-5-C. The active phases, $\alpha$-MoC$_{1-x}$ and MoO$_x$Cy, associated with Brønsted acid sites in 15% Mo-HZSM-5-A is responsible for high activity in methane conversion (~13%), excellent aromatic selectivity (38%), and high stability of the catalyst.

Regular Article

Total synthesis of sannanine and analogues thereof

Badher Naveen and Rajagopal Nagarajan. 28

The first total synthesis of Sannanine has been accomplished with an overall 30% yield in a concise manner. The key strategies involve Friedländer quinoline synthesis, demethylation, in situ oxidation and amination processes.
Regular Article

Temperature effects on the hydrophobic force between two graphene-like surfaces in liquid water
Tuhin Samanta and Biman Bagchi. .......................... 29

The correlation length of effective hydrophobic force increases on lowering the temperature of the system. Critical de-wetting distance \( d_c \), where drying transition phenomenon occurs, shifts to lower value of inter-wall separation \( d \) upon cooling.

Regular Article

Subtle interaction between Ag and O\(_2\): a near ambient pressure UV photoelectron spectroscopy (NAP-UPS) investigations
Manoj Kumar Ghosalaya, Kasala Prabhakar Reddy, Ruchi Jain, Kanak Roy and Chinnakonda S Gopinath ....................... 30

Mildly oxidized Ag-surface is identified to exhibit different electronic structure between 390 and 450 K and at 0.1 mbar O\(_2\). Intensity ratio of Ag 4d/O 2p \( \approx 3 \) indicating metallic-Ag character under the above conditions underscores the unique and subtle Ag-O\(_2\) interaction. Space charge layer created offers the electrophilic oxygen, to interact with electron-rich molecules.

Regular Article

Synthesis and molecular docking of pyrimidine incorporated novel analogue of 1,5-benzodiazepine as antibacterial agent
Apoorva Misra, Swapnil Sharma, Divya Sharma, Sunil Dubey, Achal Mishra, Dharma Kishore and Jaya Dwivedi .................. 31

Novel pyrimidine-incorporated 1,5-benzodiazepine analogues through its nitrile-derived amidoxime using one-pot domino approach have been synthesized. Structures of all the compounds were established through IR, \(^1\)H NMR, \(^{13}\)C NMR and mass spectral data. Further, antibacterial activity test was performed using broth micro-dilution assay and the probable mode of action of compound (6) was examined via field emission scanning electron microscopy (FE-SEM) and molecular docking studies.
1. Ethyl methyl ketone (1.3 equiv.)
   10% Ethanolic KOH (1 equiv.)
   90 °C, 12 h, N₂

2. aq. CAN (2.4 equiv.)
   CH₃CN, rt, 1 h

3. 33 wt.% aq. MeNH₂ (1.2 equiv.)
   EtOH, rt, 2 h

30% Overall yield

**Cover Picture**: Total synthesis of sannanine and analogues thereof
For details, see the paper by Badher Naveen and Rajagopal Nagarajan.
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