Issue 83 November 2023

The I.S.H.C. Bulletin

Recent Publications of Members

Issue 83 November 2023

Please send any articles for inclusion in future publications to ishc@surrey.ac.uk

If you wish to advertise any conferences or vacant positions, please email ishc@surrey.ac.uk

**** SAVE THE DATE: 29th ISHC CONGRESS: 21-26 JULY 2024 in Aveiro, Portugal ****
Congress Website now open: https://ishc-2024.events.chemistry.pt/

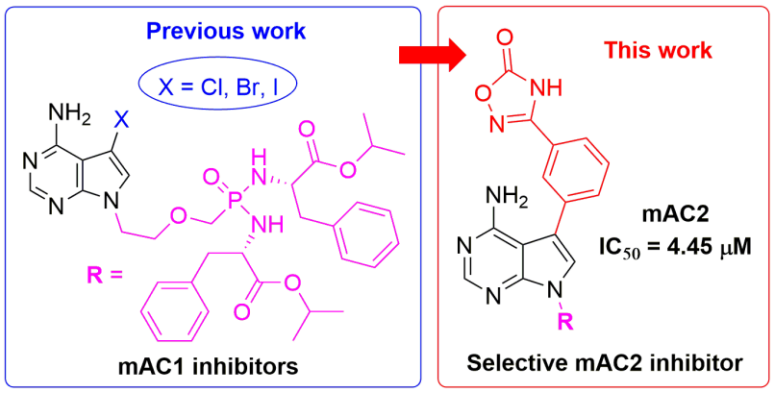
Call for nominations for the **2024 ISHC E. C. Taylor Senior Award**, the **2024 ISHC A. R. Katritzky Junior Award**, and the **2024 ISHC Industrial Award**, is now open. Closing Date: **31st January 2024**.

Discovery of a Potent and Selective human AC2 inhibitor based on 7-Deazapurine Analogues of Adefovir

Pavel Kraina, Michal Česnek, Eva Tloušťová, Helena Mertlíková-Kaiserová, Camryn J. Fulton, Emily K. Davidson, Val J. Watts, Zlatko Janeba

Bioorganic & Medicinal Chemistry **95**: 117508, 2023. https://doi.org/10.1016/j.bmc.2023.117508

Adefovir based acyclic nucleoside phosphonates were previously shown to modulate bacterial and, to a certain extent, human adenylate cyclases (mACs). In this work, a series of 24 novel 7-substituted 7-deazaadefovir analogues were synthesized in the form of prodrugs. Twelve analogues were single-digit micromolar inhibitors of *Bordetella pertussis* adenylate cyclase toxin with no cytotoxicity to J774A.1 macrophages. In HEK293 cell-based assays, compound **14** was identified as a potent (IC_{50} = 4.45 μM), non-toxic, and selective mAC2 inhibitor (vs. mAC1 and mAC5). Such compound represents a valuable addition to a limited number of small-molecule probes to study the biological functions of individual endogenous mAC isoforms.



International Society of Heterocyclic Chemistry
ISHC

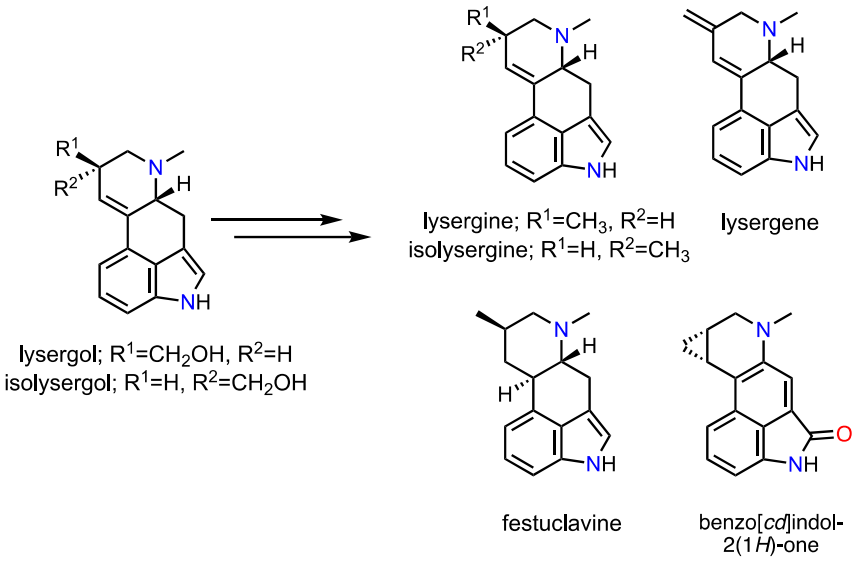
Issue 83 **November 2023**

Concise Total Syntheses of Lysergene, Lysergine, Isolysergine and Festuclavine

Nikhil R. Tasker and Peter Wipf

Arkivoc **2024** (2), 202312120 **DOI**: 10.24820/ark.5550190.p012.120

In Honor of Professor Samir Zard and in Celebration of His Exceptional Creative Contributions to Organic Synthesis

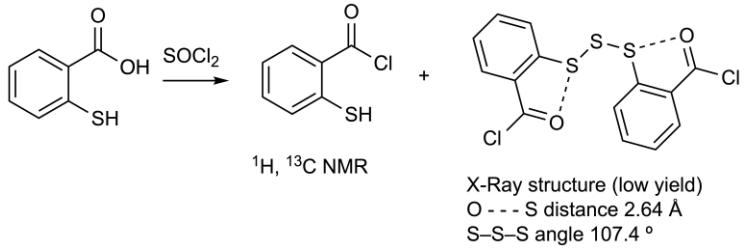


The therapeutic potential of ergot alkaloids for the treatment of psychiatric illness is under active re-investigation. We were able to leverage our streamlined synthesis of all four stereoisomers of lysergol and isolysergol to establish new approaches to the ergot alkaloids lysergene, lysergine, isolysergine and festuclavine. This synthetic strategy complements and expands previous total syntheses of these natural products. In the course of the preparation of isolysergine, we also discovered an interesting new cascade process leading to formation of a cyclopropanated ergolin-2(3*H*)-one as a spontaneous oxidation product of an intermediate 1,3-dihydrobenzo[*cd*]indole that was formed in an intramolecular S_N2-reaction.

2,2'-Trisulfanediyldibenzoyl Chloride

R. Alan Aitken, Alexandra H. Campbell, Chloé E. Fletcher and Alexandra M. Z. Slawin

Molbank **2023***, 2023*, M1731 (1–6). DOI: 10.3390/M1731



The X-ray structure of the title compound, formed in low conversion in the reaction of thiosalicylic acid with thionyl chloride, has been determined. The acid chloride groups are oriented to permit an attractive non-bonding O···S interaction. Mechanisms are suggested for formation of this unexpected product. ^{1}H and ^{13}C NMR data are also reported for the first time for the major reaction product, 2-mercaptobenzoyl chloride.

International Society of Heterocyclic Chemistry
ISHC

Issue 83 **November 2023**

New Bicyclic Pyridine-Based Hybrids Linked to the 1,2,3-Triazole Unit: Synthesis via Click Reaction and Evaluation of Neurotropic Activity and Molecular Docking.

Molecules 2023, 28, 921-953. doi: 10.3390/molecules28030921

Samvel N. Sirakanyan , Domenico Spinelli , Anthi Petrou , Athina Geronikaki , Victor G. Kartsev ,Elmira K. Hakobyan , Hasmik A. Yegoryan , Luca Zuppiroli , Riccardo Zuppiroli , Armen G. Ayvazyan ,Ruzanna G. Paronikyan , Tatevik A. Arakelyan and Anush A. Hovakimyan.