VIJAYA COLLEGE

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Medicinal & Synthetic Organic Chemistry — Drug Discovery (9)

Nine papers report the design, synthesis, spectral characterisation and biological evaluation of new heterocyclic scaffolds — indoles, oxadiazoles, benzimidazoles, isatins and triterpenoids — screened as anticancer, anti-tubercular, antimicrobial, antidiabetic, antioxidant and anti-Alzheimer's agents, each supported by molecular docking and dynamics studies.

1. Exploration of novel imidazo[4,5-b]indoles scaffolds as multi target peroxidase, acetylcholinesterase, and butyrylchloinesterase inhibitors: synthesis, spectral analysis, and molecular docking studies

Authors: Sridhar B. T.; Nagesh G. Y.; Basavarajaiah S. M.; Prashantha Karunakar; Vishwas Aradhya K. J.; Hemanth T. J.; Naveen H. R.; Nimishamba S.; Kavya N.; Ahmad Hosseini-Bandegharaei

Journal: Spectroscopy Letters (Taylor & Francis)

DOI: 10.1080/00387010.2025.2546897

Type / Year: Research Article • 2025

Abstract:

We herein report the design, synthesis, and biological activities of substituted imidazo[4,5-b]indoles 5(a–f) as a powerful antioxidant and anti-Alzheimer's disease activity. The synthesized molecules were characterized using spectroscopic techniques, including infrared spectroscopy, nuclear magnetic resonance (1H and 13C), mass spectrometry, and elemental analysis. The predictions regarding drug-likeness and toxicity, including favorable bioavailability of all the synthesized compounds, were disclosed. Furthermore, these newly synthesized compounds 5(a–f) demonstrated excellent inhibitory potential against peroxidase, acetylcholinesterase (AChE), and butyrylcholinesterase (BChE). Among the compounds, compound 5f showed excellent inhibitory activity with IC50 values of 08.52 ± 0.32 μM, 05.29 ± 0.09 μM, and 08.28 ± 0.10 μM against peroxidase, AChE, and BChE, respectively. Finally, the compounds described above were subjected to in silico molecular modeling against cytochrome c peroxidase (PDB ID: 2X08), AChE (PDB ID: 7E3H), and BChE (PDB ID: 4BDS). The compounds exhibited excellent binding interactions with all the proteins synthesized above.

2. Novel C-3 and C-20 derived analogs of betulinic acid as potent cytotoxic agents: design, synthesis, in vitro and in silico studies

Authors: Nisar A. Dangroo; Ziad Moussa; Mustafa S. Alluhaibi; Abdulrahman A. Alsimaree; Mohammed B. Hawsawi; Reem I. Alsantali; Jasvinder Singh; Nidhi Gupta; Basavarajaiah S. M.; Prashantha Karunakar; J. M. Mir; Manzoor A. Rather; Saleh A. Ahmed

Journal: RSC Advances (Royal Society of Chemistry), 2025, 15, 15164–15177

DOI: 10.1039/d5ra01038a

Type / Year: Research Article • 2025

Abstract:

In this report, novel derivatives of betulinic acid were designed and synthesized by targeting the C-3-OH group and C-20 olefinic bond in an endeavour to develop potent antitumor agents. These analogs were screened for their anticancer activity against six different human cancer cell lines including breast cancer MCF-7, lung cancer A549, colon cancer HCT-116, leukemia MOLT-4, prostate carcinoma cell PC-3 and pancreatic cancer cell Miapaca-2 by MTT assay. Many derivatives displayed better cytotoxicity than the parent compound BA. More significantly compounds 9b, 9e, 10 and 11a were found to have more promising activity than BA. Compound 11a was the most potent analog with IC50 values of 7.15 (MCF-7), 8.0 (A549), 3.13 (HCT-116), 13.88 (MOLT-4), 8.0 (PC-3) and 6.96 (MiaPaCa-2) μM. In addition to experimental investigations, in silico aspects were evaluated for the parent compound, BA and 11a derivative based on its potential bioactive behaviour. The representative compounds were optimized structurally using density functional theory (DFT). GaussView 6.1 graphical interface associated GAUSSIAN 09 (Revision C.01) software package was used for the calculations under 6-311g(d,p)/B3LYP formalism using under a SMD model (water as solvent) for the parent compound BA and 11a to explain the respective bioactive behaviour. This was followed by molecular docking studies suggesting that compound 11a binds efficiently with all the three proteins with the docking score of −7.2 kcal mol^{-1} in the case of matrix metalloproteinase-2 (PDB ID: 1HOV) and poly[ADP-ribose] polymerase-1 (PDB ID: 1UK0) and −6.7 kcal mol^{-1} in the case of TRAF2 (PDB ID: 2X7F). Further, molecular dynamics studies between 11a and the three proteins were carried out using Desmond Maestro v11.3 to study protein–ligand interactions and protein stability.

3. Design, Synthesis, and In Vitro and In Silico Biological Exploration of Novel Pyridine-Embedded 1,3,4-Oxadiazole Hybrids as Potential Antimicrobial Agents

Authors: Shivakumara K. N.; Basavarajaiah S. M.; Nagesh G. Y.; Prashantha K.; Yogesh M.; Abhishek N. R.; Odesha H. N.

Journal: Journal of Chemistry (Wiley), Volume 2025, Article ID 4427650, 12 pages

DOI: 10.1155/joch/4427650

Type / Year: Research Article • 2025

Abstract:

Antibiotic resistance represents a significant public health challenge in the current century. The β-lactam antibiotics, together with carbapenems, are inactivated by zinc-dependent bacterial enzymes called metallo-β-lactamases (MBLs). Presently there are no clinically permitted MBL inhibitors, and to produce such drugs, it is indispensable to comprehend their inhibitory action. We investigated an efficient synthesis of pyridine-embedded 1,3,4-oxadiazole hybrids (3a-c) and their antimicrobial activity against different microbial strains. The compounds were characterized by spectral techniques (viz., IR, NMR, and mass). The in vitro antibacterial and antifungal activity was also performed; the compounds (3a-c) displayed excellent antimicrobial activity. The in silico docking studies were evaluated with proteins New Delhi Metallo-Beta-lactamase-1 (NDM-1) and Mycobacterium tuberculosis enoyl reductase (INHA). All the compounds demonstrated a significant binding affinity for the docked proteins. Additionally, molecular dynamics were disclosed for compounds (4a-c).

4. Exploration of novel isoniazid embedded 1,3,4-oxadiazole hybrids as anti-TB, antioxidant, and COX inhibitors: synthesis, spectral analysis, and molecular modeling studies

Authors: S. P. Jisha; G. Y. Nagesh; Prashantha Karunakar; G. Nidhi; B. T. Sridhar; S. M. Basavarajaiah

Journal: Journal of the Iranian Chemical Society (Springer)

DOI: 10.1007/s13738-025-03179-y

Type / Year: Research Article • 2025

Abstract:

A series of novel 2-(chloromethyl)-5-(pyridin-4-yl)-1,3,4-oxadiazole (3a-h) derivatives have been synthesized as potential anti-TB, antioxidant, and COX inhibitors. The structure of these derivatives is confirmed by the IR, NMR (1H and 13C), and mass spectral analysis. All the newly synthesized derivatives were evaluated for their physicochemical properties by Swiss ADME. Based on our previous work and structural activity relationship study, foresaid isoniazid derivatives were evaluated for in vitro anti-TB, antioxidant, and COX inhibitory activity. The compound 3f exhibited outstanding anti-TB activity with a MIC value of 0.8 µg/mL. The compounds 3d, 3f, and 3h proved promising antioxidant activity at a concentration of 10 µg/ml with inhibition rates of 66.12%, 67.59%, and 66.28%, respectively. The compounds 3e, 3f, and 3h established excellent COX-I inhibitions with IC50 values of 4.21, 3.24, and 4.89 µM compared to standard drugs. Finally, the molecular docking studies carried out with Mycobacterium tuberculosis enoyl reductase (INHA) complexed with 1-cyclohexyl-N-(3,5-dichlorophenyl)-5-oxopyrrolidine-3-carboxamide (PDB ID: 4TZK), cytochrome c peroxidase (PDB ID: 2X08), and cyclooxygenase-2 (PDB ID: 6COX) for all the newly synthesized derivatives.

5. Exploration of a Novel Indole/Pyrazole Scaffold as a Promising Dual α-Glucosidase and α-Amylase Inhibitor: an In Vitro, In Vivo and In Silico Approach Toward Antidiabetic Drug Design

Authors: Govinda Anjanayya; Ramesh Gani; Murigendra Hiremath; Apsara Kavital; Shrinivas Joshi; Karabasanagouda Timanagouda; Raifa Abdul Aziz; Shamprasad Varija Raghu; Basavarajaiah Suliphuldevara Mathada

Journal: Russian Journal of Bioorganic Chemistry (Pleiades Publishing), 2025, Vol. 51, No. 2, pp. 755–771

DOI: 10.1134/S1068162024605391

Type / Year: Research Article • 2025

Abstract:

Objective: We aimed to develop a novel heterocyclic compound incorporating both indole and pyrazole moieties to assess its antidiabetic properties, as most existing antidiabetic medications, such as acarbose, voglibose, and miglitol, lack these specific structural features. Methods: The newly synthesized sulfonamide-based indole and pyrazole derivatives were characterized using mass spectrometry, 1H, 13C NMR, IR, and techniques. In vitro and in vivo studies were conducted using Drosophila melanogaster as a model organism to evaluate toxicity and antidiabetic activity. Molecular modeling studies were performed using Sybyl-X, version 2.0. Results and Discussion: The results indicate that compound (C-04) (IC50 = 83.87 μM for α-amylase and IC50 = 73.15 μM for α-glucosidase) and compound (IVb) (IC50 = 63.34 μM for α-amylase and IC50 = 80.92 μM for α-glucosidase) exhibited significant enzyme inhibitory activities compared to acarbose, the positive control (IC50 = 35.17 μM). In addition, ADME properties of the synthesized compounds were analyzed using the SwissADME online tool. Further research can be conducted on compounds (IVb) and (C-04) to explore their potential as novel antidiabetic treatments by systematically increasing the dose, which may enhance their therapeutic efficacy. Conclusions: The findings suggest that compounds (C-04) and (IVb) hold promise for further development and could potentially undergo clinical trials in the future.

6. Design, Synthesis, Spectral Characterization, and Antimicrobial Evaluation of Novel Indole-2-Carbohydrazide Derivatives: Experimental and Computational Insight

Authors: Sridhar B. T.; Suliphuldevara Mathada Basavarajaiah; Nagesh Gunavanthrao Yernale; Mohit Agrawal; Ramesh S. Gani; Mohd Imran; Jisha S. P.

Journal: ChemistrySelect (Wiley-VCH), 2025, 10, e04757

DOI: 10.1002/slct.202504757

Type / Year: Research Article • 2025

Abstract:

The investigation for efficient and nontoxic antimicrobial medication is an imperative subject in drug design and discovery. In this study, we report the synthesis, spectral characterization, and antimicrobial evaluation of novel 3,5-disubstituted-N′-((2-hydroxynaphthalen-1-yl)methylene)-1H-indole-2-carbohydrazides 3(a–f) and their derivatives 4(a–f) and 5(a–f). The structure of these compounds was confirmed by IR, 1H and 13C NMR, mass spectrometry, and elemental analysis. In the present study, the Becke, three-parameter, Lee–Yang–Parr (B3LYP) functional was employed to explore the electronic structure and behavior of the investigated compounds. The synthesized compounds were evaluated in vitro for antimicrobial activity against Staphylococcus aureus, Escherichia coli, Salmonella Typhi, Candida albicans, Aspergillus flavus, Aspergillus niger, and Mycobacterium tuberculosis. Among them, compounds 3a, 3b, 4e, 5a, 5b, 5c, and 5e exhibited excellent antimicrobial activity with minimum inhibitory concentration values 1.56–6.25 μg/mL, comparable to standard drugs. Drug-likeness predictions and in silico molecular docking and dynamics studies against mycobacterial enoyl reductase (InhA; PDB ID: 4TZK) further supported their potential as promising antimicrobial candidates.

7. Exploration of 1,3,4-oxadiazoles Engrafted With Indole and Phthalimide Scaffolds as Multi Target Peroxidase, Acetylcholinesterase, and Butyrylchloinesterase Inhibitors: Synthesis, DFT Calculations, and Molecular Docking Studies

Authors: B. Jaishree; S. M. Basavarajaiah; Prashantha Karunakar; Sunil Laxman Dhonnar; G. Y. Nagesh; M. Punithkumar; P. Bhargav; K. J. Vishwas Aradhya

Journal: ChemistrySelect (Wiley-VCH), 2025, 10, e202404925

DOI: 10.1002/slct.202404925

Type / Year: Research Article • 2025

Abstract:

Here, we present the structural and pharmacological characteristics of 2-(4-(5-(3,5-disubstituted-1H-indol-2-yl)-1,3,4-oxadiazol-2-yl)phenyl)isoindoline-1,3-diones 5(a-h) as a strong antioxidant and anti-Alzheimer's disease activity using a synergistic combination of theoretical and experimental techniques. The structures of novel compounds were analyzed by spectral analysis (IR, NMR and Mass spectrometry). DFT calculations were analyzed for the selected compounds by applying the B3LYP hybrid functional and the 6–31G (d, p) basis set. The predictions regarding ADMET properties, drug-likeness, and toxicity, including favorable bioavailability of all the synthesized compounds were disclosed. All the newly synthesized compounds 5(a–h) were illustrated well to comparable inhibitory potentials ranging from IC50 values 12.12 ± 0.02 μM to 36.31 ± 0.26 μM, 04.08 ± 0.86 μM to 12.42 ± 0.32 μM, and 08.05 ± 0.06 μM to 26.36 ± 0.52 μM against peroxidase, acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) respectively. Amongst, compound 5a showed excellent inhibitory activity with IC50 values 12.12 ± 0.02 μM, 04.08 ± 0.86, and 08.05 ± 0.06 against peroxidase, acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) respectively. Finally, aforesaid compounds were taken for the in silico molecular modeling against cytochrome c peroxidase (PDB id: 2X08), acetylcholinesterase (PDB ID: 7E3H), and butyrylcholinesterase (PDB ID: 4BDS).

8. Discovery of Novel Isatin Encompassing Oxadiazoles as Potential Inhibitors against New Delhi Metallo-β-lactamase-1: Synthesis, Spectral Analysis, Antimicrobial, and Molecular Modeling Studies

Authors: B. T. Sridhar; G. Y. Nagesh; K. Prashantha; M. Yamuna; S. Sanjay; K. R. Srinath; K. Ranjinikanth; R. S. Gani; R. Nalini; S. M. Basavarajaiah

Journal: Russian Journal of Bioorganic Chemistry (Pleiades Publishing), 2024, Vol. 50, No. 4, pp. 1376–1389

DOI: 10.1134/S106816202404023X (the copy in the source PDF is a proof-stage version printing "DOI: ???")

Type / Year: Research Article • 2024

Abstract:

Objective: Efficient synthesis of isatin Schiff's bases (IIIa–IIId) and isatin-derived 1,3,4-oxadizoles (IVa–IVd) and evaluation of their in vitro antibacterial, antifungal, and anti-TB activities. The molecular docking studies were performed with protein New Delhi Metallo-Beta-lactamase-1 and Mycobacterium tuberculosis enoyl reductase and molecular dynamics simulation. Methods: The chemical structures were confirmed by IR, NMR, and mass spectroscopic techniques. The biological screenings were studied for the foresaid compounds for their in vitro antibacterial, antifungal, and anti-TB activity using MIC method. Molecular docking and dynamics simulation studies were conducted using AutoDock software with proteins New Delhi Metallo-Beta-lactamase-1 (NDM-1, PDB ID: 3ZR9) and Mycobacterium tuberculosis enoyl reductase (INHA, PDB ID: 4TZK). Results and Discussion: The compounds (IVa–IVc) displayed excellent in vitro antimicrobial activity. Also, the compounds (IVa–IVc) were found to be most active with a MIC of 3.125 μg/mL. For the docked proteins, all the compounds exhibited a substantial binding affinity. Further, molecular dynamics were disclosed for compounds (IVa–IVc). Conclusions: The compounds (IIIa–IIId) and (IVa–IVd) were synthesized from substituted isatins, p-amino benzoic acid, and isoniazid with moderate to excellent yields. These reactions are simple, convenient, and hitherto novel. In docking studies the compounds (IVa–IVc) showed excellent bind affinity towards the enzymes.

9. Harnessing the Therapeutic Potential of Benzimidazole Encompassing Piperazine Hybrids: Synthesis, Spectral Analysis, In Vitro, and In Silico Biological Evaluation

Authors: N. Devaraju Bilidegalu; S. L. Vidhya; K. Nirusha; H. S. Nagendra Prasad; Mallesha Ningegowda; Syeda Hajira Banu; M. B. Sridhara; A. P. Ananda; S. M. Basavarajaiah

Journal: ChemistrySelect (Wiley-VCH), 2025, 10, e01542

DOI: 10.1002/slct.202501542

Type / Year: Research Article • 2025

Abstract:

Synthesis of a lead compound with impartial bioactivity against an explicit intention is always a demanding task. We herein report the design and synthesis of piperazine–benzimidazole derivatives. The synthesized compounds were investigated in vitro for their antibacterial and antioxidant activities. The synthesized compounds were confirmed by different spectral techniques such as 1H NMR, 13C NMR, and LCMS. In silico properties of synthesized compounds, such as molecular docking, ADME, and PASS were investigated using respective software. The primary report shows that all the synthesized compounds exhibited potent activity against both gram-positive and gram-negative bacteria. Investigate the MIC value in the range of 03.67 ± 093 to 11.78 ± 0.65 μg/mL, respectively. Amongst the compounds 9d, 9f, 9k, and 9l gave excellent activity against tested pathogens. Further, in the antioxidant effect of the compound 9l gave excellent activity. Further, the synthesized compound 9f was evaluated for their in silico docking studies with four enzymes (PDB ID: 5IST, 3SRW, 1AXW, and 5I5H). Finally, compound 9f was taken for a dynamic study with protein 3SRW.

Reviews in Synthetic & Medicinal Chemistry (2)

Two invited reviews consolidate the current state of the art in indole synthesis by transition-metal catalysis and in the synthetic and biological exploitation of active methylene acetonitrile.

10. Contemporary Developments in the Transition-Metal Catalyzed Synthesis of Indoles. A Review

Authors: B. T. Sridhar; Nagesh Gunavanthrao Yernale; Basavarajaiah Suliphuldevara Mathada

Journal: Organic Preparations and Procedures International (Taylor & Francis), 2025, Vol. 57, No. 4, 289–311

DOI: 10.1080/00304948.2025.2501652

Type / Year: Review Article • 2025

Abstract:

[No formal abstract printed; the article opens with a table of contents.] This review surveys transition metal-catalyzed routes to the indole nucleus developed over the last ten years, covering palladium-, rhodium-, ruthenium-, gold-, silver-, iron- and copper-catalyzed indole syntheses. It is motivated by the prominence of the indole moiety in medicinal chemistry, with active compounds spanning anti-inflammatory, antihypertensive, vasodilator, antibiotic, antiviral, anti-HIV, analgesic, antimigraine and anticancer drugs.

11. New Horizon and Advancements in Synthetic and Biological Applications of Active Methylene Acetonitrile: Mini-Review

Authors: Lavanya Nagamalla; Kavitha Kothireddy; Basavarajaiah Suliphuldevara Mathada; Sharanagouda J. Patil; Lavanya Lakshminarayana

Journal: Journal of Chemistry (Wiley), Volume 2025, Article ID 8938074, 13 pages

DOI: 10.1155/joch/8938074

Type / Year: Review Article • 2025

Abstract:

Acetonitrile is generally used as an organic solvent and can also be used as a significant starting material via active methylene acetonitrile in organic synthesis. Its widespread use has led to the development of new methods for the synthesis of a variety of important compounds. This review aims to give a broad overview of synthetic routes, structural modifications, synthesis of new hybrid scaffolds of various heterocyclics, and biological activity of active methylene acetonitrile compounds. Especially in the field of electrochemical conversions involving acetonitrile, due to its good conductivity and environmentally friendly features, it has become a powerful and compelling tool to afford nitrogen-containing compounds or nitrile-containing compounds. Besides, a detailed discussion of the substrate scope and mechanistic pathways is provided. While condensed aromatics, heterocyclics, allylic and aliphatic thiazoles, furans, thiophenes, imidazoles, pyrimidines, pyrazoles, coumarin, quinolines, oxazolones, pyridazines, quinoxalines, and oxazoles can be conveniently synthesized from the key intermediate active methylene acetonitrile. In conjunction with the earlier reports, this manuscript provides insight into basic structural transformations and the prominence of active methylene acetonitrile in the field of leading pharmaceuticals, medicinal candidates, and fine chemicals. Additionally, we have summarized the most important biological activities.

Materials, Catalysis & Environmental Chemistry (2)

Two papers address sustainability: metal-organic frameworks for the removal of textile dye from wastewater, and a promoted mixed-oxide catalyst for converting biomass-derived furfural into fuel-range intermediates.

12. Investigating the adsorption of acid blue 90 onto porous MIL53(Fe) and Cu-BTC sorbents: An examination of process parameters, isotherm modelling, and kinetic studies

Authors: Georges Teikam Kenda; Donald Raoul Tchuifon Tchuifon; Aurelien Bopda; Merdouce Dongmo; Idris-Herman Kuete Tiotsop; Kora Lucresse Tiomo Nguena; Cyrille Ghislain Fotsop; Nche George Ndifor-Angwafor; S. Mathada Basavarajaiah; Ahmad Hosseini-Bandegharaei

Journal: Results in Chemistry (Elsevier), 17 (2025) 102615

DOI: 10.1016/j.rechem.2025.102615

Type / Year: Research Article • 2025

Abstract:

Removal of dyes from wastewaters is significantly imperative due to their environmental impacts. Metal-organic frameworks (MOFs) are good adsorbents for dye decontamination. The MIL53(Fe) and Cu-BTC MOFs were synthesized by solvothermal method and characterized by scanning electron microscopy, energy dispersive X-ray spectroscopy, Fourier-transform infrared spectroscopy, X-ray diffraction, thermal techniques, N2 physisorption isotherm studies and pH at the point of neutral charge determination. Batch mode experiments were conducted for the optimization of acid bleu 90 adsorption. The effect of adsorption parameters such as pH, dye concentration, contact time, and mass of the adsorbent were investigated using the response surface methodology based on the central composite design. Non-linear models were exploited to fit adsorption isotherm and kinetic models in order to explain the mechanisms of adsorption. Optimal sorption conditions were identified as: pH 6.23, 50 mg/L dye concentration, 90 min contact time, and 25 mg of adsorbent mass for MIL53(Fe) and pH 10.00, 50 mg/L dye concentration, 10 min contact time and 25 mg of adsorbent mass for Cu-BTC. The maximum adsorption capacities were 25.733 mg/g for MIL53(Fe) and 26.133 mg/g for Cu-BTC. Kinetic modelling revealed heterogeneous surface adsorption. Adsorption of acid blue 90 onto MIL53(Fe) was best fitted by the Elovich model, whereas adsorption using Cu-BTC was best fitted by the pseudo-second order model. Both MOFs exhibited effective removal of acid blue 90, with potential application in industrial wastewater treatment.

13. Condensation of biomass derived furfural with acetone over NaAlO2 promoted Mg–Al mixed oxides under microwave irradiation

Authors: Hemanth Kumar C. M.; Chandra Shekara B. M.; Prakruthi H. R.; Prakasha K. C.; Srikanta A. S.; Vijendra Kumar K. B.; Radhika Rao B.; Kavya A. R.

Journal: Results in Chemistry (Elsevier), 18 (2025) 102643

DOI: 10.1016/j.rechem.2025.102643

Type / Year: Research Article • 2025

Abstract:

The selective synthesis of long-chain oxyfuel intermediates by the condensation of hemicellulose-derived furfural with acetone over NaAlO2-promoted Mg–Al mixed oxides under solvent-free microwave irradiation has been reported. A series of MgAl-SA-x catalyst samples were obtained by impregnating different weight percentages (Wt%) of NaAlO2 over Mg–Al hydrotalcite (HT) followed by calcination. The resulting catalysts were characterized using PXRD, BET, SEM-EDX, FT-IR, and CO2-TPD techniques to evaluate changes in morphology, texture, and basicity. The catalytic activity of the MgAl-SA-x samples was assessed in the condensation of biomass-derived furfural with acetone under microwave heating. The effects of catalyst amount, mole ratio, reaction time, and reaction temperature on conversion and selectivity to 4-(2-furanyl)-3-buten-2-one (FAc) were studied to optimize the reaction conditions. Among the prepared catalyst samples, the 15 wt% sodium aluminate impregnated catalyst (MgAl-SA-15) exhibited maximal furfural conversion with 93 % selectivity towards FAc under milder reaction conditions. Moreover, the use of microwave irradiation has been propitious in enhancing the reaction rate under shortened reaction times.

Food Science, Nutrition & Applied Biochemistry (2)

Two studies of the Indian food supply — the nutrient profile of indigenous rice varieties, and a comparison of cold-pressed against refined groundnut oil.

14. A Review on Major Parameter Proximate Analysis for Analysing Nutrient Value of Selected Indian Rice Varieties

Authors: Srikanta A. S.; M. T. Padmaja; Varshini D.; Akshaya M.

Journal: International Journal of Research and Analytical Reviews (IJRAR), April 2025, Volume 12, Issue 2

DOI: Not assigned — Paper ID IJRAR25B1064 (E-ISSN 2348-1269; P-ISSN 2349-5138)

Type / Year: Review Article • 2025

Abstract:

Indian rice varieties have high nutrient value when compared to rice varieties of various neighbouring asian countries. The aromatic rice grown in India provides 650 to 680 cal/person/day with sufficient nutriention values. Since rice is the major dietary requirement of indians it must be able to provide all the nutritional requirement including vitamins and minerals. This paper is an overall review of proximate analysis of 10 rice varieties grown across the country. The main components being starch in the rice is about 80% having amylase and amylopectin polysaccharide. Each grain of rice has around 10% of water with 6% digestable protein in the most of the Indian varieties selected for investigation. The Indian varieties are rich in lysine amino acid and hence the calculated Protein Efficiency Ratio (PER) is very high. The major metal ions namely Calcium (Ca^{2+}), Magnesium (Mg^{2+}), Copper (Cu^{2+}) and Maganese (Mn^{2+}) had high nutritional value and their composition changes due to difference in soil condition and regions across India. The fat contents is still low in Indian varieties when compared to other asian countries. Apart from the major energy giving component the B complex vitamins like vitamin B1 (Thiamine) and vitamin B2 (Niacin) is very low in Indian varieties. The non aromatic rice varieties of Indian origin have almost agreeable percentage of nutrients in proximate analysis. The details and the outcome of this paper can be utilised to increase the nutrient values of different components better forming methods and use of bio fertilizers not only increases yield but also fortify the rice varieties with optimum and desirable levels of minerals and vitamins. Using this data it is possible to provide recommended dietary allowance (RDA) to growing population maintaining the nutrient value as per the international standards and prevent malnutrition and nutritional deficiencies in the country.

15. **Comparative study of physicochemical properties of cold-pressed groundnut oil and refined groundnut oil from well-known brands in Bengaluru**

Authors: Jyothi R. Kumar; Tanushree O. S.; Sriyavanika S.; A. Roopika; Shravya Jagadish; Srushti D.; Tejeshwari A.

Journal: International Journal of Novel Research and Development (IJNRD), Volume 9, Issue 11, November 2024

DOI: Not assigned — Paper ID IJNRD2411102 (ISSN 2456-4184)

Type / Year: Research Article • 2024

Abstract:

Groundnut oil is widely used in India since time immemorial since it is tasty, has good nutritive value and is affordable. Groundnut oil is extracted by cold pressed (traditional) method or by Refined method (modern). The cold pressed method involves crushing nuts and forcing oil under pressure without use of much chemicals and without generation of too much heat. It is claimed that this method of oil extraction does not cause loss of nutrition in the extraction process. This increases the cost of oil, as less oil can be extracted from the nuts by this method. The refined oil method uses high temperature and chemicals for oil extraction, which is said to strip oil of many nutrients. More oil can be extracted by this method and so, decreases the cost of oil. This paper compares various physicochemical properties of cold pressed and refined ground nut oil of popular brands available in Bengaluru city to find out which method of oil extraction is beneficial for health. Acid value, Iodine value, Peroxide value, Antioxidant activity were some of the parameters evaluated for comparison.

Arts & Humanities (1)

16. Exploring the Healing Potential of Creative Expression

Authors: Vimala C. T.; Etienne Rassendren

Journal: Shanlax International Journal of Arts, Science and Humanities, vol. 12, no. S4, 2025, pp. 112–122

DOI: 10.34293/sijash.v12iS4.May-9166

Type / Year: Research Article • 2025

Abstract:

Not being understood in the domestic sphere and its associated forms of depression are yet to be widely acknowledged and accepted as a mental health issue in India. The gendered programming of domestic/familial roles often relegate the woman into functions that are monotonous, laborious and daunting. Much of the household work is associated with the procuring, preparation and serving of food. The Kitchen invariably becomes the centre of all activity – a place where nourishment for the entire family emanates and aspirations of the individual woman, are put on the burner. The seething emotions often bubble over, simmering in a cauldron of ignorance, ingratitude and a sense of obscurity bestowed upon by the family. Sacrifices are aplenty; rewards and recognition – zilch. This insensitivity and indifference leads to a vortex of emotions that build into a volley of issues ranging from anger, irritation, pain, suffering, loneliness and depression. A woman becomes lost in the process of nurturing the lives of her loved ones while yearning for love, respect, identity and realization of her dreams. The mental balance is lost. This is where Poetry comes in handy as a medium of expression. Studies have proven the healing effect of words. This paper is an attempt at unravelling the cathartic and therapeutic essence of poems on mental well-being. The scholar, through a reading of poetry by Hiba Ashraf, Vimala and others, aims to provide an analysis and interpretation of select poems that establish a cathartic and restorative relationship between poems and mental health.

EDITORIAL NOTES

- All bibliographic details in this bulletin were transcribed directly from the published versions of the papers supplied in the source compilation. Titles, author lists and abstracts are reproduced as printed by the respective publishers.
- Two papers — entries 14 (IJRAR) and 15 (IJNRD) — carry no DOI. These journals identify articles by a paper ID rather than a DOI; the identifiers are recorded in place of the DOI.
- Paper - Entry 8 (Russian Journal of Bioorganic Chemistry, 2024) appears in the source compilation as a pre-publication proof, which prints “DOI: ???”. The DOI shown here (10.1134/S106816202404023X) was recovered from the reference lists of companion papers that cite it and should be verified against the final published version.
- Paper-Entry 10 (Organic Preparations and Procedures International) carries no printed abstract; the article opens directly with a table of contents. A scope summary drawn from the article's opening section is given in its place and is marked as such.