Neem Research Newsletter
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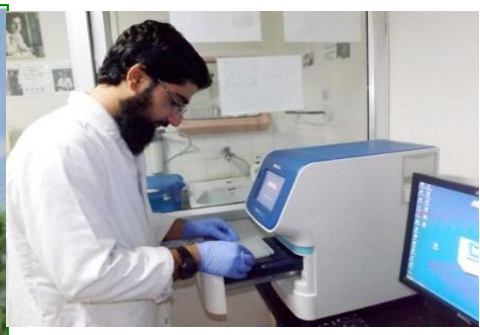

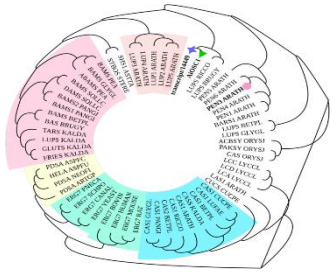

From

The Editor's Desk……

This Newsletter on various neem research publications in the last month demonstrates novel several findings. A study from Mexico demonstrated effective pest control of Stevia cultivation by the application of Neem as a bioinsecticide without compromising seedling vigor, supporting its use as part of sustainable crop management. In the area of horticulture, neem oil added to a preservative solution was found to be the most promising practice for prolonging the vase life and maintaining high quality of Solidago flowers after harvesting. A large, meticulously curated and manually validated dataset was generated to classify leaf quality of medicinal plants including neem with a view to enhancing tree health monitoring, improving crop yield, and promoting sustainable agricultural practices. The populations of diamondback moth, a destructive pest of cruciferous crops was significantly reduced by ISR: PLT-008A1 mixed with spinosad (Entrust), alone or combined with a single application of azadirachtin + pyrethrins (Azera). Molecular docking and simulation analysis showed that nimbolide is a promising candidate for black mold disease, a major post-harvest issue in onion. A comprehensive review on the biomolecular, behavioural, and physiological toxicity effects of azadirachtin on aquatic species, revealed significant lethal and sublethal effects on various species, including fish and invertebrates raising concerns about potential long-term environmental impacts.

In the area of human health, Neem leaf extract mediated synthesis of zinc oxide nanoparticles (ZnO NPs) showed significant inhibition of antibacterial activity. A sprayable hydrogel developed based on thermo/pH dual-responsive polymer incorporating Neem Extract exhibited favorable sprayability, appropriate gelation properties, controlled drug release, and antioxidant activity, underscoring its promising translational potential in wound dressing. In another study, 124 chemicals from neem were examined to determine if they can be utilised as specific orexinergic receptor modulators (neurons that regulate the sleep-wake cycle) using advanced computational methods. Molecular property profiling indicated that the majority of the compounds exhibit excellent drug-like qualities. Tamarixetin, a flavonol derived from Azadirachta indica significantly reduced the proliferation of colorectal cancer cells, with minimal effects on normal cells. Furthermore, Tamarixetin inhibited proliferation, migration, and invasion of cancer cells in addition to sensitizing cancer cells to the chemotherapeutic drug oxaliplatin. In a very interesting study, neem was found to delay postmortem changes indicating its antimicrobial properties. This has added a new dimension to the multifarious applications of neem as an eco-friendly alternative to chemical methods especially in resource-limited or culturally specific settings.

Neem in combination with turmeric was shown to improve feed conversion ratio and meat quality without affecting gut morphology and haemato-biochemical indices in broiler chicken.

S. Nagini

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Neem in Agriculture & Aquaculture

Sustainable agronomic strategies and experimental design for Stevia cultivation in the high mountains region of Veracruz, Mexico.

Gutérrez-González CI, Bolaños-Reynoso E, Bolaños-Reynoso JL, López-Zamora L, Méndez-Contreras JM.Sci Rep. 2025 Aug 12;15(1):29571. doi: 10.1038/s41598-025-08267-w.PMID: 40796582

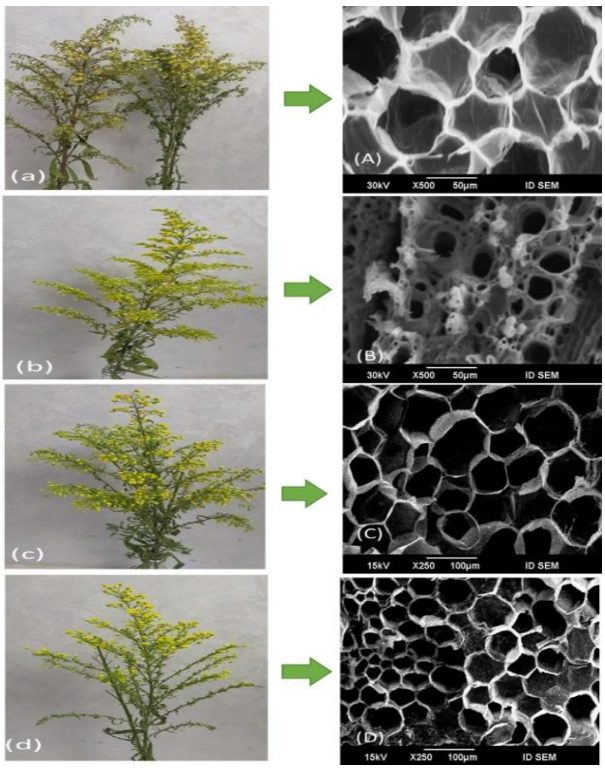
Stevia rebaudiana Bertoni represents a sustainable alternative to conventional sweeteners due to its short growth cycle, low environmental impact, and potential for cultivation in diverse ecological regions. This study evaluated the growth performance of Stevia seedlings under controlled temperature and humidity conditions in the high mountain region of Veracruz, Mexico. A 2^2 factorial experimental design was implemented to assess the effect of these variables on stem elongation, width, and leaf development. Results indicated that humidity had the most significant influence on plant growth, with optimal development observed under high humidity conditions (R^2>0.85). Additionally, the application of Azadirachta indica (Neem) as a bioinsecticide demonstrated effective pest control without compromising seedling vigor, supporting its use as part of sustainable crop management. The findings highlight the potential of Stevia cultivation as a strategy for agroecological diversification and climate-resilient agriculture in Mexico. Future research should incorporate variables such as nutrient supplementation, light intensity, and microbial interactions to enhance predictive growth models and improve cultivation practices.

Ameliorating quality and vase life of Solidago canadensis flowers via supplementation of eucalyptus, **neem** and rosemary as phyto-preserver oils.

El-Sayed IM, Mohamed El-Ziat RA, Saudy HS, Hewidy M.BMC Plant Biol. 2025 Aug 14;25(1):1070. doi: 10.1186/s12870-025-07131-3.PMID: 40813966

Purpose: The loss of flower quality after harvesting is a major concern in the floriculture industry. Because cut flower solutions are quickly contaminated with microbes, causing flower damage, they must be modified to enhance and extend the life of the vase.

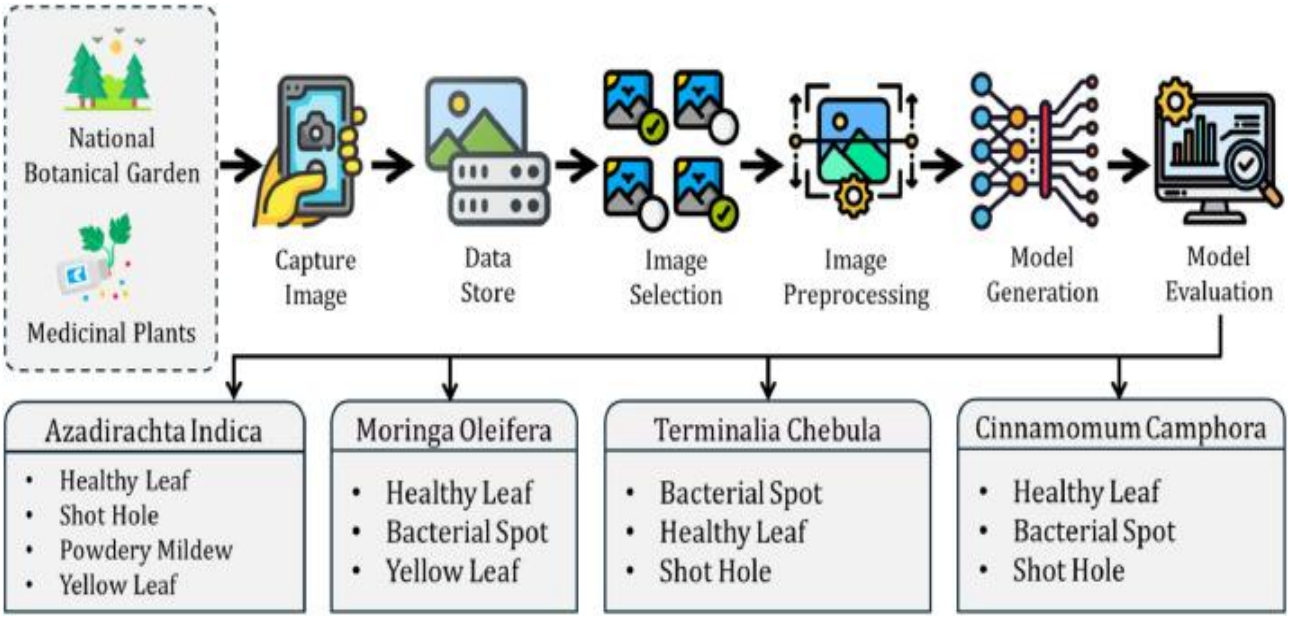
Methods: Eco-friendly preservative solutions were examined to investigate the efficiency of natural essential oils of eucalyptus, neem and rosemary at concentrations of 200 and 400 mg L^{-1} each on the biological, physiological, and anatomical traits and vase life of solidago (Solidago canadensis) cut flower.



Results: Using different essential oils at both concentrations showed significant impact on cut flower longevity. The maximum vase life was obtained by solidago placed in a preservative solution containing 400 mg L^{-1} of neem essential oil, which enhanced water uptake and relative fresh weight and reduced both water loss and microbial count when compared to other treatments and control treatment. The chlorophyll, total phenol, flavonoid, and carotenoid content of the spikes increased in solidago cut-flower placed in a preservative solution containing neem essential oil 400 mg L^{-1}. Results also showed decreased malondialdehyde (MDA), hydrogen peroxide (H_2O_2) levels and total antioxidant activity (DPPH radical-scavenging activity) with the application of all natural oils supply. Anatomically, cut flowers that treated with essential oils had considerably clearer vessels and significantly fewer bacteria than untreated cut flowers.
Conclusion: The higher concentration of different essential oils gave better results than the lower concentration. These results suggest that for the floriculture industry, natural phyto-oils provide a clear viable method to extend the vase life of solidago cut flowers. Thus, neem oil at a concentration of 400 mg L^{-1} added to a preservative solution is considered the most promising practice for prolonging the vase life and maintaining high quality of Solidago.

AI-MedLeafX: a large-scale computer vision dataset for medicinal plant diagnosis.
Ferdous MF, Nissan FBK, Nibir NM, Bijoy MHI.Data Brief. 2025 Aug 5;62:111945. doi: 10.1016/j.dib.2025.111945. eCollection 2025 Oct.PMID: 40837485

This study presents a large, meticulously curated and manually validated dataset aimed at classifying leaf quality into five critical categories: Healthy, Bacterial Spot, Shot Hole, Yellow, and Powdery Mildew. The dataset encompasses four distinct plant species-Cinnamomum Camphora (Camphor), Terminalia Chebula (Haritaki), Moringa Oleifera (Sojina), and Azadirachta Indica (Neem)-each represented across three or four disease categories, depending on observed symptoms and final number of classes is thirteen (13 classes). Data collection was conducted between November 1, 2024, and January 5, 2025, utilizing four different mobile cameras to ensure diversity in image resolution, lighting, and environmental conditions. The original dataset comprised 10,858 high-resolution images, which were subsequently expanded to 65,148 through the application of six comprehensive data augmentation techniques, including rotations (45°, 60°, and 90°), horizontal flipping, zooming and brightness adjustment. All images were standardized to 512×512 pixels to ensure uniformity and seamless compatibility with machine learning and computer vision models. This enriched dataset serves as a crucial resource for the development of automated plant disease detection systems and supports advancements in precision agriculture. It not only addresses the pressing need for scalable, high-quality data in agricultural research but also establishes a solid foundation for benchmarking novel deep learning architectures. By enabling more accurate and efficient leaf disease classification, the dataset contributes significantly to enhancing tree health monitoring, improving crop yield, and promoting sustainable agricultural practices.



Horticultural EntomologyA semiochemical attract-and-kill formulation to manage diamondback moth (Lepidoptera: Plutellidae).

Muthomi PK, Seal D, Mafra-Neto A, Liburd OE.J Econ Entomol. 2025 Aug 23:toaf193. doi: 10.1093/jee/toaf193. Online ahead of print.PMID: 40848304

The diamondback moth, Plutella xylostella (L.), is one of the most destructive pests of cruciferous crops worldwide. This pest has gained notoriety due to its high dispersal ability, substantial number of generations per year, and high potential to develop resistance to various classes of insecticides. Current management practices for diamondback moth in cabbage rely heavily on chemical control. However, increasing resistance to insecticides and concerns about nontarget effects underscore the need for alternative pest management tools. The attractiveness of product code ISR: PLT-008A1, a semiochemical Specialized Pheromone and Lure Application Technology formulation, was evaluated against diamondback moths using a 4-choice olfactometer to present a choice to adult insects between untreated samples of cabbage leaves and samples treated with ISR: PLT-008A1. Diamondback moths chose cabbage discs treated with ISR: PLT-008A1 as their first choice compared to untreated cabbage samples. In the field, ISR: PLT-008A1 mixed with small quantities of different insecticides were evaluated against diamondback moth and beneficial insects. ISR: PLT-008A1 mixed with spinosad (Entrust), alone or combined with a single application of azadirachtin + pyrethrins (Azera), applied on the middle beds of the plots, reduced diamondback moth populations. Natural enemy populations also increased in these 2 treatments compared to other treatments. These findings confirm that ISR: PLT-008A1 effectively attracts diamondback moth and can be used to manage diamondback moth populations when combined with an insecticide. ISR: PLT-008A1 combined with reduced-risk insecticides (spinosad and azadirachtin) can be integrated into a cole crop integrated pest management program in both organic and conventional systems.

Molecular docking and simulation analysis of nimbolide with poly-galacturonase from *Aspergillus niger*: Managing black mold disease for *Allium cepa*.

Dangwal P, Juyal S, Bhatt A, Baunthiyal M, Singh DB.Bioinformation. 2025 May 31;21(5):1050-1056. doi: 10.6026/973206300211050. eCollection 2025.PMID: 40822806

Black mold disease is a major post-harvest issue in *Allium cepa* caused by *Aspergillus niger*. Therefore, it is of interest to describe the molecular docking and simulation analysis of poly-galacturonase protein from *Aspergillus niger* that is involved in disease progression as a promising molecular target for the identification of novel fungicides. Hence, we used I-TASSER to model the protein and docked it with the naturally occurring phytoalexins, which included nimbolide, nimbolin, Azadiradione, Quercetin and Azadirone. We show that nimbolide has the greatest affinity towards poly-galacturonase as compared to other phytoalexins binding with residues Gln205, Gln261, Tyr262 having four hydrogen bonds and -8.0 kcal/mol binding energy. Further, molecular dynamics simulation of protein and docked nimbolide-polyglacturonase complex was carried out to validate the stability of the system at the atomic level. Based on the study, the molecule shows potential for inhibiting pathogenic proteins, making it a promising candidate for further validation under laboratory and field conditions to ensure food and nutritional security.

Toxicological effects of azadirachtin on aquatic species: A review of its role in biopesticides.

Sacco D, Velíšek J, Mikušková N.Aquat Toxicol. 2025 Aug 21;288:107547. doi: 10.1016/j.aquatox.2025.107547. Online ahead of print.PMID: 40897009

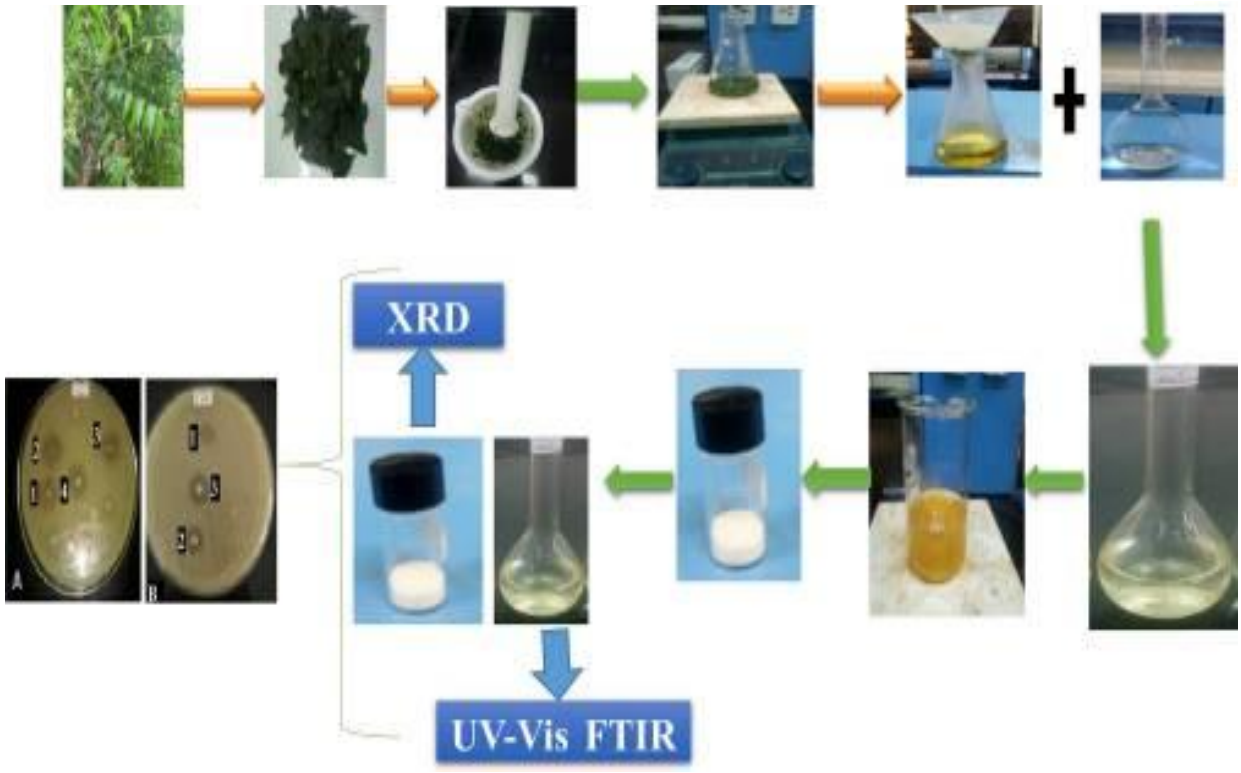
Azadirachtin (AZA) is a bioactive compound extracted from the neem tree Azadirachta indica. It is commonly used in biopesticide formulations due to its antifeedant, growth-inhibiting, and reproductive-disrupting properties. While AZA is considered an environmentally friendly alternative to synthetic pesticides because it degrades rapidly in soil and is compatible with organic farming and aquaculture, there are growing concerns about its ecotoxicological effects on aquatic ecosystems. Therefore, this review critically examines the acute and chronic toxicity to non-target aquatic organisms. The review presents studies on the biomolecular, behavioural, and physiological toxicity effects of AZA on aquatic species, providing a comprehensive overview of its impact. Studies on acute and chronic exposure reveal significant lethal and sublethal effects on various species, including fish and invertebrates. Additionally, uncertainties regarding the behaviour of AZA metabolites and AZA formulations raise further concerns about potential long-term environmental impacts. This is particularly important in aquatic environments where AZA may persist and affect non-target species. Despite its biodegradability, AZA ability to disrupt aquatic ecosystems highlights the need for further research on its environmental fate, the effects of its degradation by-products, and the long-term risks associated with its widespread use. Addressing these knowledge gaps is essential for ensuring AZA-based pesticides are safe and sustainable for application in integrated pest management (IPM) programs.

Neem for Human Health

Neem (Azadirachta indica) leaf extract mediated synthesis of zinc oxide nanoparticles (ZnO NPs) and their antibacterial activity.

Tsegahun E, Aklilu M.Discov Nano. 2025 Aug 22;20(1):145. doi: 10.1186/s11671-025-04260-4.PMID: 40844683

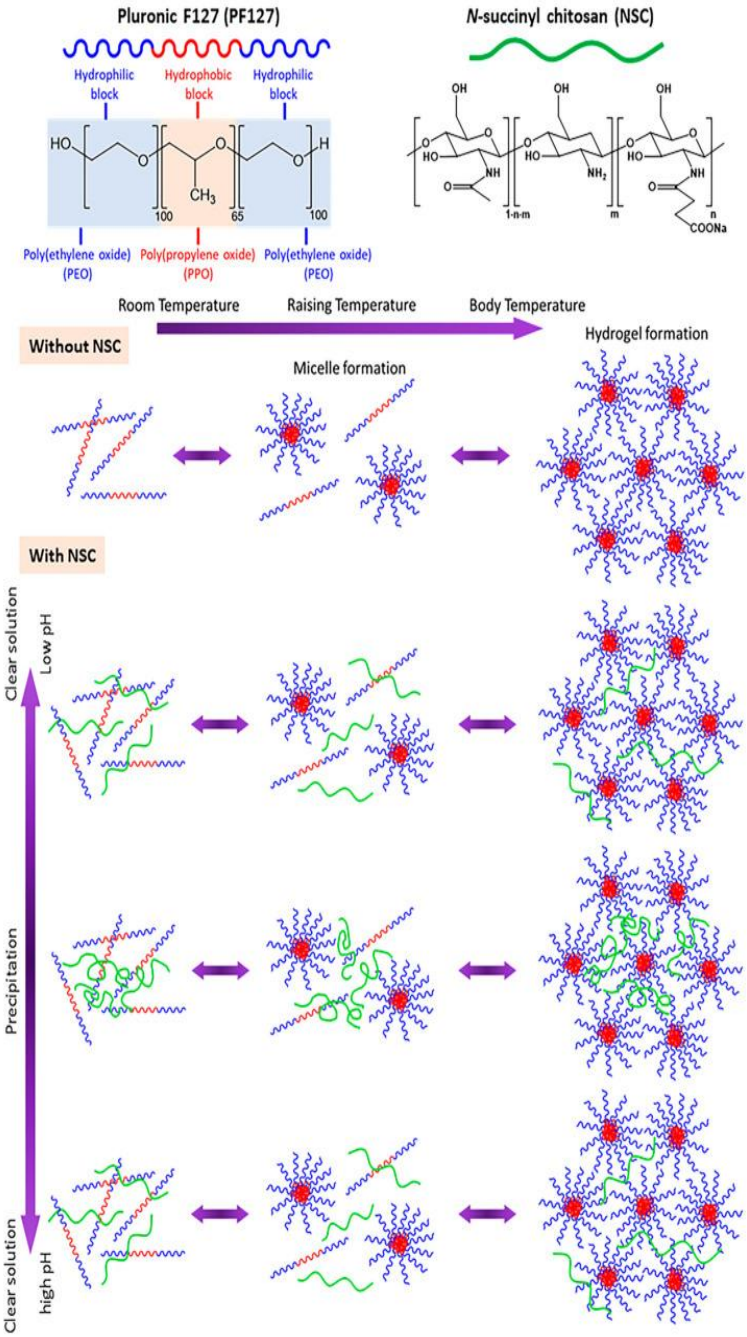
In this study, we prepared zinc oxide nanoparticles using a quick, safe, and cost-effective method by reducing $Zn(NO_3)_2 \cdot 6H_2O$ solution with Neem (Azadirachta indica) leaf extract. Qualitative phytochemical screening and FT-IR spectroscopy measurements were employed to validate the presence of active biomolecules such as Flavonoids, phenols, alkaloids, terpenes and tannic compounds. FT-IR, UV-Vis, and XRD spectroscopic techniques were utilized to fully analyze the biosynthesized nanoparticles. The spectrum of UV-Visible spectroscopy indicated UV-Vis spectrum of 321 nm. FTIR spectra showed the absorption peak for the stretching vibration of Zn-O at 544 cm^{-1}. The results obtained supported the formation of ZnO NPs employing A. indica leaf extract as a reducing and stabilizing agent. X-ray diffraction spectrum analysis was also used to investigate the crystal structure. The particle size of ZnO NPs was calculated using the Scherrer's equation and the result was found to be 19.16 nm. Furthermore, the antibacterial potential of zinc oxide nanoparticles against two clinical strains of Escherichia coli (E. coli) and Staphylococcus aureus (S. aureus) bacteria was examined by paper disc diffusion method. The result showed a significant inhibition zone of 18 mm against E. coli and an inhibition zone of 15 mm against S. aureus.



Design and Development of a Sprayable Hydrogel Based on Thermo/pH Dual-Responsive Polymer Incorporating Azadirachta indica (**Neem**) Extract for Wound Dressing Applications.

Rungrod A, Makarasen A, Patnin S, Techasakul S, Somsunan R.Polymers (Basel). 2025 Aug 7;17(15):2157. doi: 10.3390/polym17152157.PMID: 40808205

Developing a rapidly gel-forming, in situ sprayable hydrogel with wound dressing functionality is essential for enhancing the wound healing process. In this study, a novel sprayable hydrogel-based wound dressing was developed by combining thermo- and pH- responsive polymers including Pluronic F127 (PF127) and *N*-succinyl chitosan (NSC). NSC was prepared by modifying chitosan with succinic anhydride, as confirmed by Fourier-transform infrared spectroscopy and nuclear magnetic resonance spectroscopy. The NSC synthesized using a succinic anhydride-to-chitosan molar ratio of 5:1 exhibited the highest degree of substitution, resulting in a water-soluble polymer effective over a broad pH range. The formulation process of the PF127:NSC sprayable hydrogel was optimized and evaluated based on its sol-gel phase transition behavior, clarity, gelation time, liquid and moisture management, stability, and cytotoxicity. These properties can be suitably tailored by adjusting the concentrations of PF127 and NSC. Moreover, the antioxidant capacity of the hydrogels was enhanced by incorporating *Azadirachta indica* (neem) extract, a bioactive compound, into the optimized sprayable hydrogel. Both neem release and antioxidant activity increased in a dose-dependent manner. Overall, the developed sprayable hydrogel exhibited favorable sprayability, appropriate gelation properties, controlled drug release, and antioxidant activity, underscoring its promising translational potential as a wound dressing.



Selective modulation of orexinergic receptors by **neem**-derived phytochemicals: Computational analysis of structure-activity relationships.

Agboola OE, Agboola SS, Agboinghale PE, Ayinla ZA, Oyebamiji AK, Olaiya OE, Fajana OM, Oyinloye OM, Adewale AI, Idowu OT, Osunsanmi FO, Ajiboye BO, Oyinloye BE.Toxicol Rep. 2025 Aug 5;15:102104. doi: 10.1016/j.toxrep.2025.102104. eCollection 2025 Dec.PMID: 40821711

Orexinergic system dysfunction is the fundamental basis for several neurological illnesses like narcolepsy, insomnia, and drug dependency, yet none of the existing medications are subtype receptor specific. This study examines 124 chemicals from neem to determine if they can be utilised as specific orexinergic receptor modulators using advanced computational methods. The methodology includes detailed clustering, pharmacophoric interaction, pharmacokinetic, statistical, and clustering analyses. Molecular property profiling indicated the majority of the compounds exhibit excellent drug-like qualities (MW 350-450 Da, LogP 0-2), while principal component analysis captured 100 % structural variability between two components (92.5 % and 7.5 %, respectively). Molecular docking simulations indicated selective binding to the 6V9S receptor (-11.3 to -4 kcal/mol) over 4S0V (-9.7 to -4 kcal/mol). Lead compounds Neem_PDB_10257 (Tirucallol) (-11.3 kcal/mol) and Neem_PDB_12072821 ([(5 R,7 R,8 R,9 R,10 R,13S,17 R) -17-(2-methoxy-5-oxo-4,4,8,10,13-pentamethyl-3-oxo-5,6,7,9,11,12,16,17-octahydrocyclopenta[*a*] phenanthrene-7-yl] acetate) were particularly 6V9S selective (>2 kcal/mol difference), whereas Neem_PDB_10160319 ((4S,4aS,5S,10S,13S,14S,17-4,4,10,13,14-pentam -1, 2, 3, 5, 6, 7, 11, 12, 15, 17-decahydrocyclopenta[*a*]phenanthren-16-one) was most sensitive towards 4S0V. Two top-ranked compound families were discovered by hierarchical cluster analysis with a distance requirement of 35 units, and receptor-specific dendrograms revealed distinctive subcluster branching patterns (4S0V: 5.5 and 6.7 unit subclusters; 6V9S: 7.1 and 7.2 unit subclusters). Interaction pattern (heatmap analysis) identified major interaction hotspots, including TYR348, TRP120, PHE227, and HIS350. Neem_PDB_163184214 (Meliatetraolenone) specifically targeted ASN318 in 6V9S, while Neem_PDB_54580354 (7-Benzoylnimbocinol) favored interaction with GLN134 in 4S0V (>90 interactions). These findings dispute the "one-pharmacophore" theory for orexinergic modulators, showing that intentional functionalization of NEM templates can deliver subtype-selective treatments with maximal sleep-wake modulation and low off-target effects.

In vitro evaluation of cytotoxicity and release kinetics of green-synthesised **Azadirachta indica** silver nanoparticles.

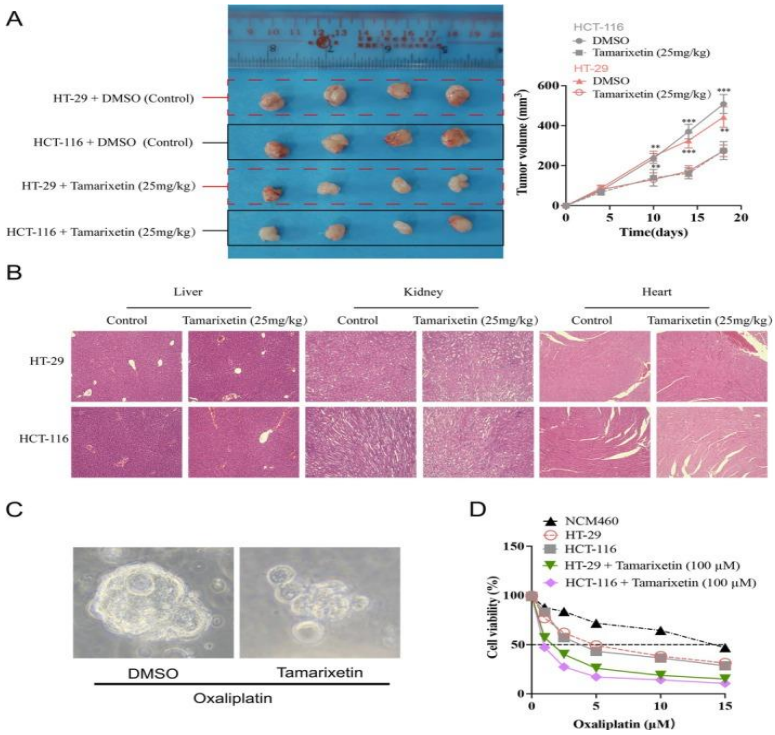
Hawadak J, Arya A, Yadav K, Pande V, Singh V.Cytotechnology. 2025 Oct;77(5):169. doi: 10.1007/s10616-025-00836-1. Epub 2025 Aug 26.PMID: 40881730

Toxicological investigations are essential to guarantee the safety of new compound for medical use prior to any clinical application. The aim of this study was to evaluate the cytotoxicity and elucidate the mechanisms of release kinetics of *Azadirachta indica*-derived silver nanoparticles (AI-AgNPs) for potential medical applications. A comprehensive in vitro cytotoxicity assessment effect using Chinese Hamster Ovary (CHO-CD36) cells was

performed using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) and lactate dehydrogenase (LDH) assays. The release kinetics were evaluated by fitting experimental data to various models, including the zero-order, first-order, Higuchi, Korsmeyer-Peppas, and Peppas-Sahlin. This allowed for elucidation of the underlying drug release mechanisms. Both MTT and LDH assays reveal that cell viability was reduced by approximately 80% at a concentration of 100 µg/mL and LDH release increased by 30-50% compared to the untreated group in a concentration-dependent manner. Morphological analysis revealed increased circularity and roundness, along with a decreased aspect ratio, indicating cellular stress or apoptosis. The Peppas-Sahlin model provided the best fit ($R^2 > 0.95$), suggesting that AI-AgNPs release was governed by a combination of Fickian diffusion and case II relaxations.

Tamarixetin Suppresses Colorectal Cancer Progression by Targeting DPP7-Mediated WNT3A/β-Catenin Signalling Pathway.

Ouyang P, Gong J, Nie J, Kandala S, Shi Y, Tian Y, Zhang Z, Fang S, Pan F, Qiu L, Bao Z.J Cell Mol Med. 2025 Aug;29(16):e70787. doi: 10.1111/jcmm.70787.PMID: 40845164



Colorectal cancer (CRC) patients have had limited benefits from conventional chemotherapy, highlighting the need for improved therapeutic strategies. Natural compounds have emerged as promising alternatives due to their potent anti-cancer properties and reduced side effects. Tamarixetin is an O-methylated flavonol derived from Azadirachta indica, but its potential and clinical utility to suppress CRC progression remain unknown. To figure out the underlying mechanism, the inhibitory effects of Tamarixetin on CRC were evaluated by in vitro assays; the validation of Tamarixetin-mediated tumour suppression was performed with CRC xenografts and patient-derived organoids. Our results demonstrated that Tamarixetin significantly reduced the proliferation of CRC cells (HT-29 and HCT-116) in a dose-dependent manner, with minimal effects on normal colonic epithelial cells (NCM460). Furthermore, Tamarixetin inhibited proliferation, migration, and invasion of CRC cells, leading to reduced xenograft tumour growth and sensitising CRC to Oxaliplatin. Mechanistically, The expression and protein levels of DPP7 in CRC cells were suppressed by Tamarixetin, which lead to the downregulation of WNT3A/β-catenin signalling pathway. This study highlights Tamarixetin as a promising natural compound for CRC treatment by interfering with DPP7-mediated WNT3A/β-catenin signalling pathway. These findings provide a novel therapeutic strategy to improve outcomes of CRC.

Neem as a Natural Preservative in Postmortem Care: A Case Report.
James T, Pathak A.Cureus. 2025 Jul 28;17(7):e88888. doi: 10.7759/cureus.88888. eCollection 2025 Jul.PMID: 40881566

This report explores the potential role of neem (*Azadirachta indica*) as a natural postmortem preservative. A 33-year-old male who died due to drowning was brought for autopsy several days after death, covered entirely in neem leaves by his family. Despite the delay, decomposition was notably less advanced than typically expected, with reduced skin slippage, bloating, and putrefactive odor. This observation suggests neem's antimicrobial and antifungal properties may help delay postmortem changes. In resource-limited or culturally specific settings, neem may offer a temporary, plant-based alternative to traditional preservation methods, warranting further scientific investigation.

Neem in Veterinary Science & Medicine

Synergistic interplay of **Azadirachta indica** and Curcuma longa improves feed efficiency and omega-6 fatty acid content in the breast muscle of broiler chicken.
Hossain ME, Adhikary K, Bhowmik P, Akter N, Islam S, Hoque MA.Vet Anim Sci. 2025 Jul 20;29:100489. doi: 10.1016/j.vas.2025.100489. eCollection 2025 Sep.PMID: 40761431

The study explores synergistic interplay of *Azadirachta indica* and *Curcuma longa* to address the current gap of suboptimal feed conversion ratio and inadequate enrichment of ω-6 fatty acids (FAs) in the breast muscle of the broiler chicken. Total 288 Ross-308 male broiler chicks were randomly distributed in a complete block design at 2 × 3 (Two different phytochemicals, i.e., *A. indica*, and *C. longa* at three different levels, i.e., 0, 0.063, and 0.125 % of the basal diet) factorial arrangement. Final live weight (FLW), average daily feed intake (ADFI), average daily gain (ADG), feed conversion ratio (FCR), carcass characteristics, cardio-pulmonary morphometry, haemato-biochemical indices, gut morphology, ileal nutrient digestibility, tibia morphometry, meat quality and FA profile were

measured. Results indicated that, supplementation of *A. indica* leaf meal (AILM) improved 6.0 % FCR (*P* < *0.001*), 35.9 % tibia calcium content (*P* = *0.007*) and 9.6 % of the digestibility of CP (*P* < *0.001*) at the expense of 14.9 % FLW (*P* < *0.001*), 20.6 % ADFI (*P* < *0.001*), 15.1 % ADG (*P* < *0.001*), and 16.0 % right to total ventricular ratio (*P* = *0.022*). Accordingly, *C. longa* powder (CLP) improved 2.1 % FCR (*P* = *0.021*) at the expense of 5.9 % FLW (*P* = *0.031*), 7.6 % ADFI (*P* < *0.001*) and 5.3 % ADG (*P* = *0.017*). The AILM substantially increased 52.4 % UFA (*P* < *0.001*), 58.2 % MUFA (*P* = *0.005*), 38.7 % ∑PUFA (*P* = *0.046*), 41.7 % ∑ω-6 FAs (*P* = *0.013*) and decreased 24.3 % ∑SFA (*P* < *0.001*). Similarly, the CLP increased 8.1 % ∑UFA (*P* = *0.022*), 21.6 % ∑PUFA (*P* = *0.015*), 22.4 % ∑ω-6 FAs (*P* = *0.033*) and decreased 4.3 % ∑SFA (*P* = *0.031*). The AILM and CLP interacted to increase 35.3 % ∑UFA (*P* = *0.003*) and to decrease 21.2 % ∑SFA (*P* = *0.008*). It was concluded that *A. indica and C. longa* concomitantly improved FCR and meat quality without affecting gut morphology and haemato-biochemical indices of the broiler chicken.