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EXPERT DESK

Pharmacy 2030: India's Leap into Global Healthcare Leadership

As of late 2025, the pharmacy sector in India and across the globe is in the midst of a profound transformation, driven by digitalization, innovation, and strategic policy reforms. India continues to solidify its title as the "Pharmacy of the World," supplying 20% of the world's generic medicines by volume. The nation's domestic pharmaceutical market is on a steep growth trajectory, projected to expand from over $50 billion to $130 billion by 2030. This growth is supported by a dual focus: enhancing affordability and access for its population while tackling critical public health challenges like Antimicrobial Resistance (AMR), a threat estimated to cause 10 million deaths annually by 2050 if left unchecked.

Simultaneously, India is strategically moving up the pharmaceutical value chain. The nation is transitioning from a high-volume generics manufacturer to an innovation powerhouse. This shift is evidenced by the establishment of over 55 Global Capability Centers (GCCs) for R&D by multinational corporations and significant investment in high-value biologics and biosimilars, a market segment in India expected to surpass $1.9 billion by 2028.

This evolution is set against a backdrop of global technological disruption. The worldwide pharmacy automation market is surging, expected to reach $9.5 billion by 2027, drastically improving dispensing accuracy and efficiency.

Technologies like telepharmacy and AI-driven diagnostics are expanding healthcare access to remote regions. The frontier of personalized medicine, guided by pharmacogenomics, is rapidly advancing, with its global market projected to exceed $900 billion by 2030. Ultimately, the future of pharmacy lies in a hybrid model that blends technological efficiency with patient-centric care. Pharmacies are evolving from mere dispensaries into integrated community health hubs. With its robust manufacturing ecosystem, expanding scientific talent, and a comprehensive digital infrastructure like the Ayushman Bharat Digital Mission, India is uniquely positioned to lead this global paradigm shift towards a more predictive, personalized, and accessible healthcare future.

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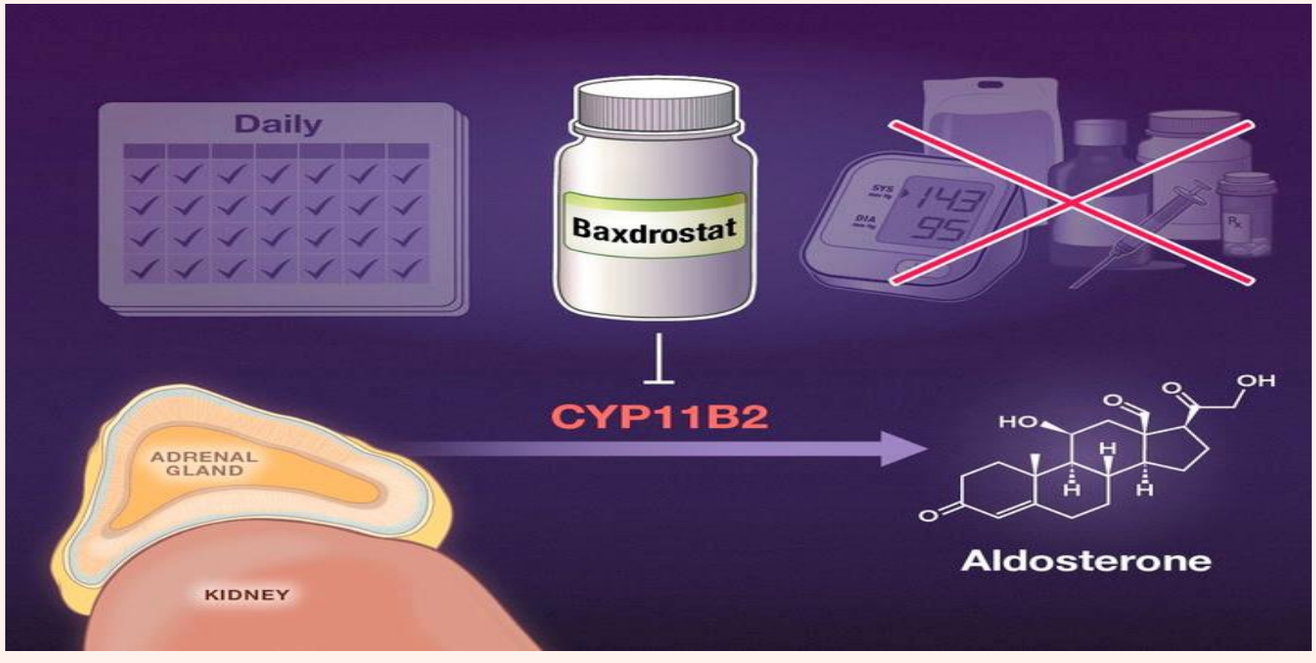
Baxdrostat: Precision Pharmacology for Aldosterone-Driven Hypertension

Introduction: A New Frontier in Hypertension Management

Hypertension, particularly its resistant form, remains a major clinical challenge despite the availability of multiple drug classes. Among the key culprits in treatment-resistant cases is aldosterone a hormone that promotes sodium retention, vascular stiffness, and cardiac remodeling. While mineralocorticoid receptor antagonists (MRAs) like spironolactone have long been used to counteract aldosterone's effects, they are often limited by hormonal side effects and electrolyte disturbances. Enter **Baxdrostat**, a first-in-class aldosterone synthase inhibitor that offers a more targeted and tolerable approach.

Mechanism of Action: Selective Aldosterone Suppression

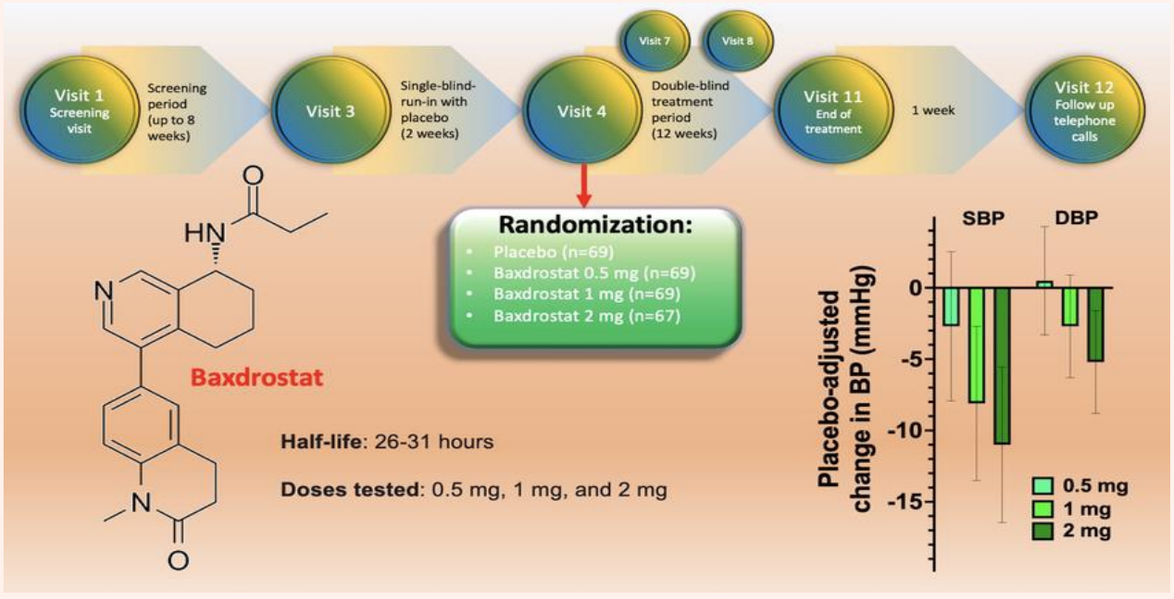
Baxdrostat works by selectively inhibiting **CYP11B2**, the enzyme responsible for converting corticosterone into aldosterone. This mechanism is fundamentally different from MRAs, which block aldosterone's action at its receptor. By preventing aldosterone synthesis altogether, Baxdrostat addresses the root cause of hormonal hypertension.



Crucially, Baxdrostat does **not inhibit CYP11B1**, the enzyme involved in cortisol production. This selectivity avoids the risk of adrenal insufficiency a major concern with earlier attempts at aldosterone synthase inhibition. The result is a **precise hormonal intervention** with minimal off-target effects.

Clinical Evidence: BrigHTN Trial Findings

The BrigHTN trial, a multicenter, double-blind, placebo-controlled study, evaluated Baxdrostat in patients with resistant hypertension. Participants were already on three or more antihypertensive agents, including a diuretic. Over 8 weeks, Baxdrostat achieved a mean systolic blood pressure reduction of 11 mmHg, with minimal changes in serum potassium and no significant adverse events.



These results position Baxdrostat as a promising alternative to MRAs, especially in patients with:

- **Salt-sensitive hypertension**
- **Primary aldosteronism**
- **Chronic kidney disease**

Its once-daily oral formulation enhances adherence, and its clean safety profile makes it suitable for long-term use even in patients with comorbidities.

Conclusion: Precision Medicine in Action

Baxdrostat exemplifies the future of hypertension therapy **targeted, tolerable, and transformative**. By addressing aldosterone excess at its source, it offers a new pathway for patients who have long struggled with control and side effects. As precision medicine continues to shape cardiovascular care, Baxdrostat stands out as a beacon of innovation, offering clinicians a powerful tool for personalized hypertension management.

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By

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Renal Denervation: Rewiring Hypertension with Precision Ablation

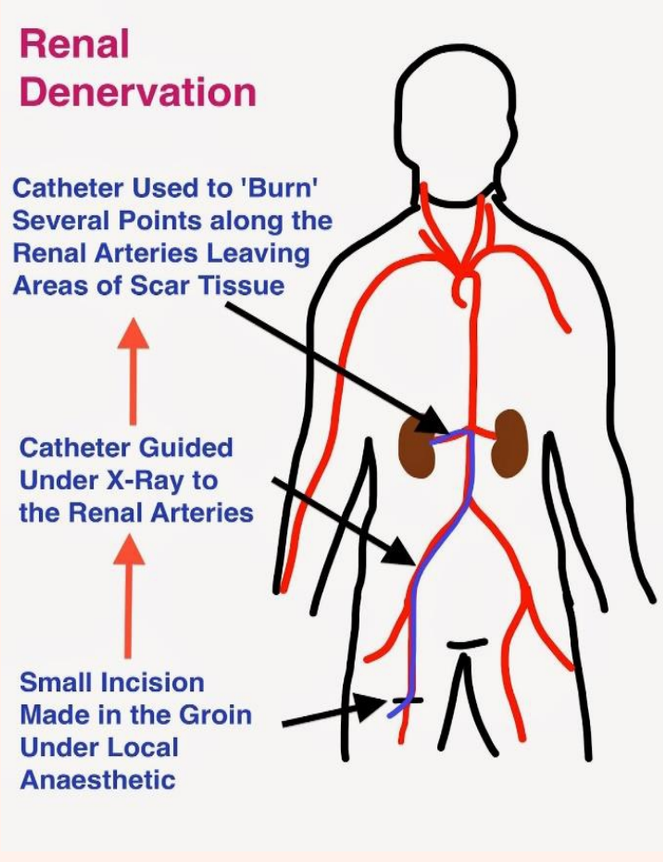
Introduction: When Medications Fall Short

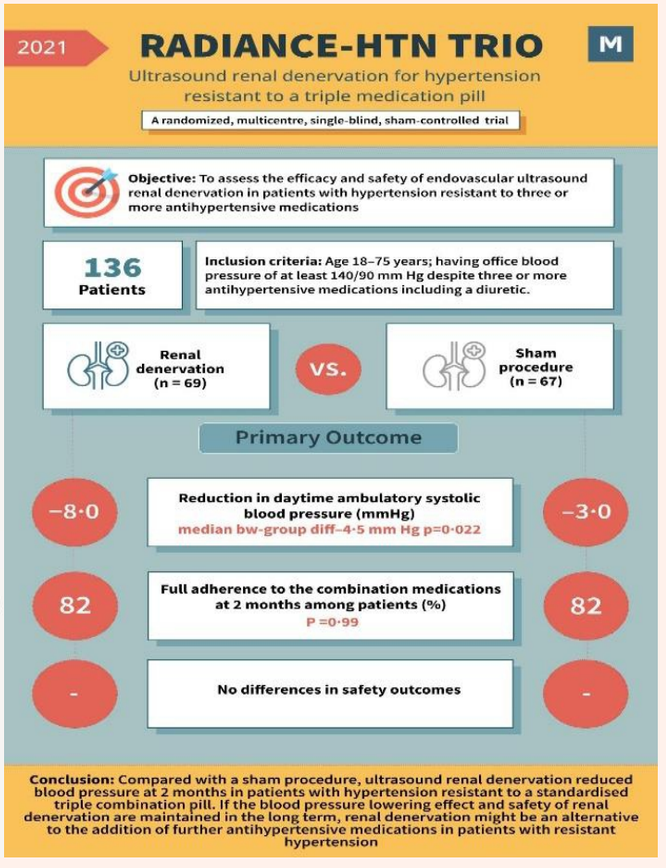
Hypertension is often manageable with lifestyle changes and pharmacologic therapy. But for nearly 10–15% of patients, blood pressure remains elevated despite optimal use of three or more antihypertensive agents, including a diuretic. This condition known as **resistant hypertension** poses a significant risk for stroke, heart failure, and chronic kidney disease. In such cases, the underlying driver is frequently **sympathetic nervous system overactivity**.

While adding more medications may offer incremental benefit, it also increases pill burden, side effects, and non-adherence. This is where **renal denervation (RDN)** steps in a non-pharmacologic intervention that targets the root of neurogenic hypertension.

Mechanism of Action: Disrupting Renal Sympathetic Signaling

The kidneys are densely supplied by sympathetic nerves that control renin release, sodium reabsorption, and vascular resistance. In resistant hypertension, these nerves become hyperactive, causing sustained vasoconstriction and fluid retention. Renal denervation (RDN) addresses this by using a catheter-based radiofrequency technique to ablate the overactive nerves, thereby reducing sympathetic tone and lowering blood pressure. Unlike medications that act on downstream effects, RDN provides a direct anatomical solution to the underlying physiological dysfunction.





Clinical Evidence: RADIANCE-HTN TRIO Trial

The **RADIANCE-HTN TRIO trial** evaluated radiofrequency RDN in patients with resistant hypertension already on triple therapy. At 6 months, patients who underwent RDN experienced a **mean ambulatory systolic BP reduction of 8 mmHg**, compared to sham controls. The procedure was safe, with no major vascular complications or deterioration in renal function.

These findings confirm that RDN is not only effective but also safe for long-term use in carefully selected patients.

Patient Selection: Who Benefits Most from RDN?

Renal denervation (RDN) is best suited for patients with confirmed resistant hypertension those whose blood pressure remains uncontrolled despite using three or more medications. It is particularly beneficial for individuals with elevated sympathetic tone, such as those with sleep apnea, obesity, or metabolic syndrome. RDN also offers an alternative for patients who struggle with medication adherence or experience intolerance to multiple drugs. Additionally, those with early-stage renal dysfunction may benefit from sympathetic modulation to help preserve kidney function.

Conclusion: A Renaissance in Hypertension Therapy

Renal denervation is no longer experimental it's a **clinically validated, minimally invasive solution** for a subset of hypertensive patients who need more than pills. As guidelines evolve and long-term data accumulate, RDN is poised to become a cornerstone therapy in specialized hypertension care.

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By

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Bone Glue Breakthrough: A Three - Minute Miracle for Fracture Repair

Nature-Inspired Innovation

In a stunning leap forward for orthopedic medicine, Chinese scientists have developed a revolutionary bone adhesive Bone-02 that can heal fractures in just three minutes. Inspired by the underwater bonding power of oysters, this glue mimics nature's genius to solve one of medicine's oldest challenges: how to repair broken bones quickly, safely, and without invasive hardware.

Oysters are known for their ability to cling to wet, turbulent surfaces using a protein-rich adhesive. Researchers at Sir Run Shaw Hospital in Zhejiang Province, led by Dr. Lin Xianfeng, studied this phenomenon and engineered a synthetic version that works inside the human body even in blood-rich environments where traditional adhesives fail.

What Makes Bone-02 Different?

Unlike conventional bone cements or metal implants, Bone-02 is a true bioadhesive. It doesn't just fill gaps it actively bonds fractured bone surfaces together. The glue is bioresorbable, meaning it naturally dissolves as the bone heals, eliminating the need for a second surgery to remove foreign materials.

Bone-02's formulation allows it to set within minutes, forming a strong, flexible bond that can withstand over 400 pounds of pressure. It also resists shear stress, making it ideal for complex fractures in high-mobility areas like joints.

Speed Meets Strength

In clinical trials involving more than 150 patients, orthopedic procedures that typically take hours were completed in under three minutes. Surgeons reported reduced bleeding, faster recovery times, and fewer complications. The adhesive's performance in lab tests was equally impressive, showing superior bonding strength compared to existing bone repair methods.

This is a major milestone. Previous attempts to create bone adhesives dating back to the 1940 were plagued by poor biocompatibility and weak adhesion. Bone-02 overcomes these limitations with a formula that's both medically safe and mechanically robust.

A Game-Changer for Orthopedic Surgery

Bone-02 could transform how fractures are treated worldwide. By reducing the need for metal implants and lengthy surgeries, it offers a safer, faster, and more cost-effective solution. Patients benefit from shorter hospital stays, lower infection risks, and quicker returns to mobility. The implications extend beyond trauma care. Bone-02 could be used in spinal surgeries, dental implants, and even reconstructive procedures anywhere bones need to be joined securely and quickly.

What's Next?

While Bone-02 is still undergoing regulatory review, its success in trials has generated global excitement. Researchers are now exploring its use in pediatric orthopedics and battlefield medicine, where speed and simplicity are critical.

As this innovation moves closer to mainstream adoption, it promises to redefine the future of bone healing turning a painful, prolonged process into a swift and seamless experience.

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By
Ms. S. Christy Jeevitha,
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STUDENT OUTREACH ACTIVITIES


World Blood Donor Day was observed under the theme "Give Blood, Give Hope: Together We Save Lives" on 13.06.2025 at VPCW Seminar Hall.



11th International Day of Yoga was observed under the theme "Yoga for One Earth, One Health" on 21.06.2025 at Srinivasa Mahal.



International Day Against Drug Abuse and Illicit Drug trafficking was observed under the theme "Breaking the Chains: Preventing, Treatment and Recovery for all" on 26.06.2025 at VPCW Seminar Hall.

Our Pharm. D students and Staff attended 9th National Conference on Clinical Pharma Practice – Indian & Global Scenario (CPP-IGS) organised by Swamy Vivekanandha College of Pharmacy, Tiruchengode on 28.06.2025.

STUDENT OUTREACH ACTIVITIES


Department of Pharmaceutical Chemistry has organized 3rd National level symposium on "Innovative breakthrough in Pharmacare Nurturing the Future Pharmacists - 2025 [IBP-NFP-2025]" on the theme "Green Synthesis: Transformation of Drug Development for a Sustainable Future in Pharmacy " sponsored by APTI, TNMGRMU and TNSEST on 07.08.2025 & 08.08.2025 at our Srinivasa mahal. This seminar holds 15 CEP awarded by TN Dr. M.G.R. Medical University. As a part of this seminar, e-poster presentation competition was conducted and winners were awarded with certificates and momento. Totally 540 delegates participated in the seminar.


Department of Pharmacy Practice has organised guest lecture on “Basic Clinical Pharmacist Intervention” at VPCW Seminar Hall by Mr. Sajan Francis, Clinical Pharmacist in Vivekanandha Medical Care Hospital on 11.08.2025.

We celebrated 79th Independence Day at our college premise on 15.08.2025.


The Parents-Teachers Meeting for D. Pharm was successfully held on 28.08.2025 at VPCW Seminar Hall, presided over by Mr. K. Varadharaju, Admission Director. Key academic updates and student progress were discussed, fostering collaboration between parents and faculty.

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Prof. Dr. M. KARUNANITHI, B.Pharm., M.S., Ph.D., D.Litt.,

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- ★ SWAMY VIVEKANANDHA PHYSIOTHERAPY COLLEGE
- ★ VIVEKANANDHA ALLIED HEALTH SCIENCE COLLEGE (Co-Ed)
- ★ KRISHNA INSTITUTE OF OPTOMETRY AND RESEARCH
- ★ VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS)
- ★ VIVEKANANDHA COLLEGE OF TECHNOLOGY FOR WOMEN
- ★ VIVEKANANDHA INSTITUTE OF INFORMATION AND MANAGEMENT STUDIES
- ★ VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)
- ★ VIVEKANANDHA COLLEGE FOR WOMEN
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★★★

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