

ROCK inhibitor

- ROCK-dependent mechanotransduction of macroscale forces drives fibrosis in degenerative spinal disease
- Pharmacotherapy and non-invasive neuromodulation for neuropathic pain: a systematic review and meta-analysis
- Advanced imaging characterization of post-chemoradiation glioblastoma stratified by diffusion MRI phenotypes known to predict favorable anti-VEGF response
- Genetic Insights Into Hemorrhagic Stroke and Vascular Malformations: Pathogenesis and Emerging Therapeutic Strategies
- Role of clonal inflammatory microglia in histiocytosis-associated neurodegeneration
- The potential role of RhoA/ROCK-inhibition on locomotor recovery after spinal cord injury: a systematic review of in-vivo studies
- In Vitro Experiment Present ROCK2 Inhibition Promotes the Therapeutic Effect of Bevacizumab in the Treatment of Glioblastoma Multiforme
- Neoadjuvant anti-PD1 immunotherapy for surgically accessible recurrent glioblastoma: clinical and molecular outcomes of a stage 2 single-arm expansion cohort

ROCK Inhibitors: Overview and Applications

1. What are ROCK Inhibitors? ROCK inhibitors are pharmacological agents that block the activity of **Rho-associated protein kinase (ROCK)**, a key enzyme in the **RhoA/ROCK signaling pathway**. These inhibitors reduce actin-myosin contractility, influencing various cellular processes like migration, proliferation, and adhesion.

2. Mechanism of Action ROCK inhibitors prevent the phosphorylation of: - **Myosin Light Chain (MLC)**: Reduces actin-myosin contraction. - **LIM Kinase (LIMK)**: Affects actin stability. - **Adhesion Proteins**: Modulate cellular stiffness and motility.

3. Common ROCK Inhibitors

Inhibitor	Clinical Use	Key Features
Fasudil	Cerebral vasospasm, hypertension	Approved in Japan; improves vasodilation.
Ripasudil	Glaucoma	Lowers intraocular pressure.
Y-27632	Research (fibrosis, neuroprotection)	Widely used in preclinical studies.
AT13148	Cancer (experimental)	Targets multiple kinases, including ROCK.

4. Clinical Applications - Cardiovascular Diseases:

1. **Hypertension**: ROCK inhibitors reduce vascular resistance and blood pressure.
2. **Pulmonary Hypertension**: Improve arterial function by relaxing smooth muscle.

- **Neurological Disorders:**

1. **Stroke:** Enhance neuroprotection and axonal regeneration.
2. **Spinal Cord Injury:** Promote axon growth and functional recovery.see [ROCK inhibitor for spinal cord injury](#)

1. **Neurodegenerative Diseases:** Potential benefits in Parkinson's and Alzheimer's.

- **Ophthalmology:**

1. **Glaucoma:** Ripasudil improves aqueous humor outflow, reducing intraocular pressure.

- **Oncology:**

1. **Cancer Metastasis:** Reduce tumor cell migration and invasion.

- **Fibrosis:**

1. **Lung, Liver, and Kidney Fibrosis:** Decrease fibroblast activation and extracellular matrix deposition.

—

5. Emerging Research - Development of **selective ROCK2 inhibitors** to minimize side effects. - Combination therapies with ROCK inhibitors for enhanced efficacy in **oncology** and **neurological diseases**.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=rock_inhibitor

Last update: **2025/02/17 08:02**

