



Better cardiovascular protection by Nebivolol can be explained because of its unique mechanism of action and super selectivity.

- ▶ Nebilok has 321-fold higher affinity for human cardiac beta1-receptors versus beta-2-receptors making it more selective for beta1-receptors than any other agent in its class (12).
- ▶ Nebilok is 3,5 times more beta-1-adrenoreceptor selective than bisoprolol.
- ▶ Nebilok because its action on the B3 receptor releases nitric oxide, which may reverse endothelial dysfunction and hence speculated to reverse atherosclerosis.
- ▶ Nitric oxide acts as an endogenous inhibitor of platelet aggregation in the platelets. Hence, Nebilok inhibits platelet aggregation triggered by adenosine diphosphate and collagen.
- ▶ Nebilok also inhibits the proliferation of human coronary endothelial cells, aortic smooth muscle cells, and smooth muscle cells via nitric oxide delivery.

References

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- ▶ Tzemos N, Lim PO, MacDonald TM: Nebivolol reverses endothelial dysfunction in essential hypertension: a randomized, double-blind, crossover study. *Circulation.* 2001, 104:511-514. 10.1161/hc3001.094207.
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- ▶ Brehm BR, Wolf SC, Bertsch D, et al.: Effects of nebivolol on proliferation and apoptosis of human coronary artery smooth muscle and endothelial cells. *Cardiovasc Res.* 2001:430-9. 10.1016/s0008-6363(00)00253-4

A Healthy **Heartbeat**
is a Wonderful **Treat**

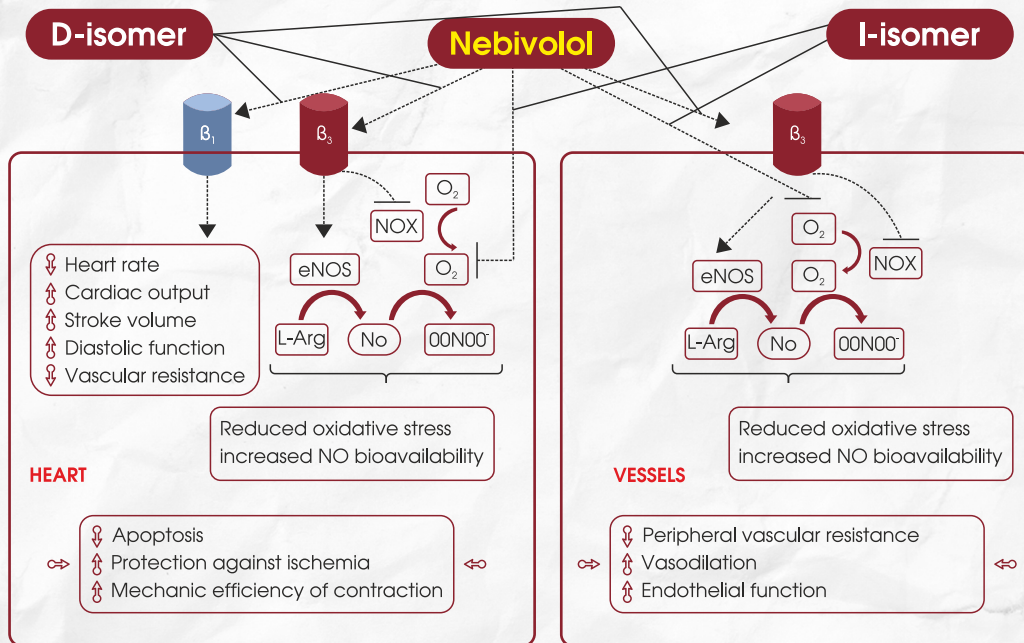
 **NEBILOK**
nebivolol hydrochloride tablets



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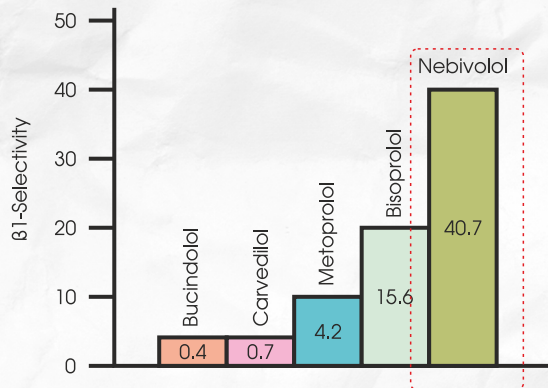
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The Unique Dual Mechanism of Nebilok



- ▶ Nebilok a novel beta-blocker with nitric oxide-induced vasodilatation.
- ▶ Nebilok is a racemic mixture of equal proportions of d- and l-isomers.
- ▶ The beta-blocker activity resides in the d-isomer while the facilitation of nitric oxide (NO) resides in the l-isomer.
- ▶ L-Isomer work on the L-arginine/NO pathway in the endothelium of various regional vascular beds to induce direct vasodilation.

Nebilok is more selective than Other Beta Blockers



Nebilok is more cardioprotective than Bisoprolol

Primary Outcome	Nebilok (n=500)	Bisoprolol (n=500)
All-cause Mortality	49 (9.8%)	57 (11.49%)
CV Mortality	27 (5.4%)	35 (7.0%)
All-cause Hospitalization	72 (14.4%)	81 (16.3%)
CV Hospitalization	49 (9.8%)	60 (12.09%)

Nebivolol compared to other beta blockers

Objective: To compare the real-world risk of hospitalization due to a CV event in patients with uncomplicated hypertension receiving nebivolol, atenolol, or metoprolol monotherapy.
Study Type: Retrospective study
N= 81,402 patients

Incidence rates of hospitalization due to CV events

	Nebilol	Atenolol	Metoprolol
Composite CV event	4.69	7.80	9.45
MI	1.07	1.93	1.86
CHF	0.66	1.02	1.45
Stroke	1.12	1.73	1.29
Angina	1.93	3.41	5.23

NEBIS Study: Nebivolol vs Bisoprolol

- A high proportion of responders was noted in nebivolol group
- Nebivolol 92.0% vs. bisoprolol 89.6%
- Adverse events were lower in the nebivolol group (5.8%) than compared to bisoprolol (8.9%).

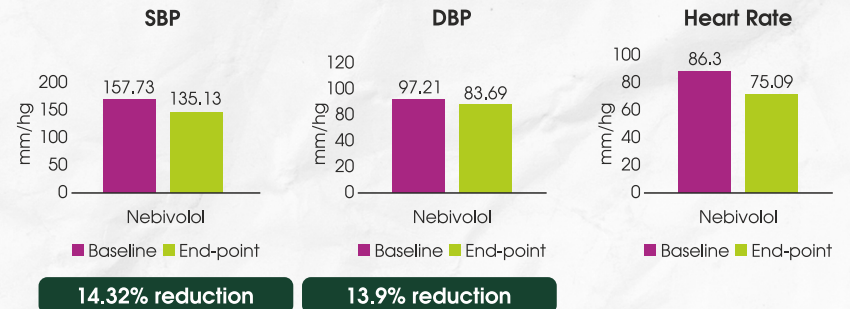
Nebilolol was associated with significantly lower risk of hospitalization due to composite cardiovascular events than atenolol or metoprolol

Nebilolol, Bisoprolol Multicenter Study (NEBIS)
 Cardiovasc Drugs Ther. 2003 May;17(3):257-63.

Cardiol Ther. 2018 Dec; 7(2): 173-183.

(Nebivolol evaluation for efficacy and safety in the treatment of hypertension) Post marketing surveillance study

- **Objective:** To evaluate the efficacy and safety of nebivolol in the treatment of hypertension in Indian patients • N= 301 patients with HTN
- **Intervention:** Nebivolol (2.5-5 mg/day) was given for 1 month



- **99.25% of patients reported good to excellent tolerability**
- **82.33% patients achieved the goals recommended by JNC VII**