

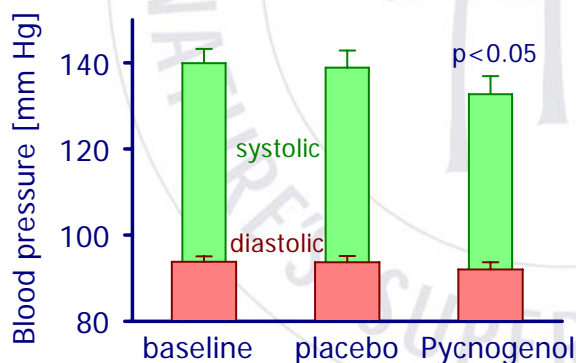
PYCNOGENOL[®] FOR HYPERTENSION

Blood pressure typically increases with age, but frequently remains unnoticed because it is symptom less. Obesity, lack of exercise and diabetes are risk factors for hypertension. Often hypertension will be diagnosed only when complications occur and damage to blood vessels and heart are prevalent. Persisting high blood pressure slowly damages blood vessels, they thicken and harden with time. When blood vessels (coronaries) supplying the heart muscle are affected, a heart attack may occur.

Hypertension is most commonly caused by constriction of blood vessels. In healthy people the cells of blood vessels produce the substance nitric oxide (NO) which instructs smooth muscles surrounding arteries to relax. In this manner blood vessels can release their constriction by themselves. With increasing age the ability to produce NO declines. This explains the gradual impairment of blood circulation and increase of blood pressure with increasing age. The ability to produce NO is also impaired in physiological disorders such as diabetes.

Pycnogenol[®] was shown in preclinical studies to stimulate an enzyme to more efficiently produce NO in cells of blood vessels. The muscle around blood vessels relaxed and diameter increased [Fitzpatrick et al., 1998].

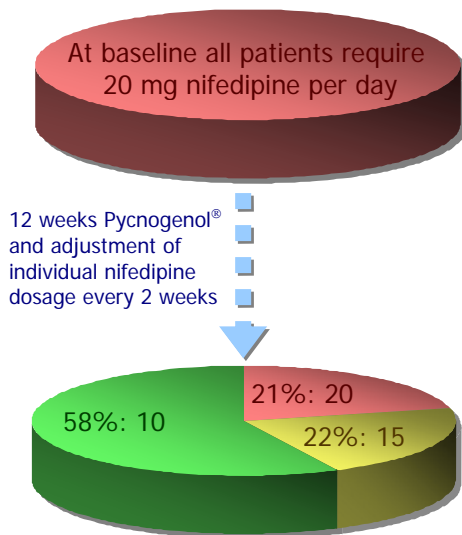
The expected blood-pressure lowering effect of Pycnogenol[®] was demonstrated in mildly hypertensive patients (± 140 mmHg), who didn't require prescribed anti-hypertensive medication yet. This study was carried out in a double-blind, placebo-controlled, cross-over fashion, so that all patients were in both the Pycnogenol[®] and placebo group for 8 weeks each.



Supplementation with Pycnogenol[®] for 8 weeks statistically significantly lowered systolic blood pressure, while placebo-treatment had no effect. Pycnogenol[®] also lowered diastolic blood pressure; however, this effect did not reach statistical significance [Hosseini et al., 2001].

Pycnogenol[®] was tested in another clinical study to investigate the feasibility of lowering dosage of anti-hypertensive medication with calcium channel blocker *nifedipine*. Fifty eight patients (average age 57 years) took either 100 mg Pycnogenol[®] or equal amounts of placebo tablets in addition to their prescribed *nifedipine* regimen (20 mg per day) over a period of 12 weeks. In two weeks intervals blood pressure was checked and *nifedipine* dosage was adjusted accordingly for each patient individually. The target was to keep the systolic blood pressure below 130 mmHg [Liu et al., 2004].

The outcome of the study showed that the majority of the patients (79%) supplementing with Pycnogenol[®] could lower their *nifedipine* medication, whereas this was not the case in the group given placebos.



This experiment demonstrates the potency of Pycnogenol[®] for supporting vascular health. Almost 60% of the patients who supplemented with Pycnogenol[®] were able to cut their prescribed medication dosage by half to keep their blood pressure in a healthy range.

In average the placebo group required a daily dosage of 21.5 mg *nifedipine* per day at the end of the trial, thus more than at baseline. In contrast, patients in the Pycnogenol[®] group in average required only 15 mg *nifedipine*.

In this study blood was drawn from patients in intervals of 1 month to investigate mediators regulating blood vessel constriction and relaxation. The important vaso-dilator nitric oxide was indeed found to be increased in response to supplementation with Pycnogenol[®]. The vaso-dilator prostacyclin was found to be significantly lowered as compared to placebo treatment. The opposite effect was found for the vaso-constrictory mediator endothelin-1, which was dramatically lowered by Pycnogenol[®].

Pycnogenol[®] fosters body-own mechanisms to support vascular health. Blood vessel constriction is released, leaving more space for blood to flow which significantly relieves high blood pressure. Pycnogenol[®] does not affect a healthy blood pressure.

By the same mechanism of action, Pycnogenol[®] also reduces platelet (thrombocyte) activity. The increased nitric oxide production lowers platelet activity and thus offers a natural approach for lowering the risk of platelet aggregation and thrombosis. Furthermore, Pycnogenol[®] supports healthier blood cholesterol levels. In three clinical studies Pycnogenol[®] was shown to lower LDL cholesterol and increase HDL cholesterol [Watson, 2003].

In conclusion, Pycnogenol[®] offers a safe nutritional approach to support a healthy cardiovascular system by tackling various conditions simultaneously. For more information please check [PYCNOGENOL[®] FOR HEART HEALTH](#).

- ✚ Fitzpatrick DF, Bing B, Rohdewald P. Endothelium-dependent vascular effects of Pycnogenol[®]. J Cardiovas Pharmacol 32: 509-515, 1998.
- ✚ Hosseini S, Lee J, Sepulveda RT, Fagan T, Rohdewald P, Watson RR. A Randomized, double blind, placebo controlled, prospective, 16 week crossover study to determine the role of Pycnogenol[®] in modifying blood pressure in mildly hypertensive patients. Nutr Res 21(9): 67-76, 2001.
- ✚ Liu X, Wei J, Tan F, Zhou S, Wurthwein G, Rohdewald P. Pycnogenol[®], French maritime pine bark extract, improves endothelial function of hypertensive patients. Life Sciences 74: 855-862, 2004.
- ✚ Watson RR. Pycnogenol[®] and cardiovascular health. Review. Evidence Based Integr Med 1: 27-32, 2003.

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