

The Power of Pycnogenol®

Webinar – 7th Oct 2025





Today's Speaker

Sue Camp

**Registered Nutritional Therapist and
Certified Functional Medicine Practitioner**

- Registered Nutritionist (MBANT)
- Registered Nutritional Therapist (CNHC)
- Certified Functional Medicine Practitioner (IFM)
- Part of the Clinical Education team for Pharma Nord
- Sue currently runs her own busy practice, does some consulting work and leads the nutrition team for the HealthMatters Group in central London.

Learning Aims

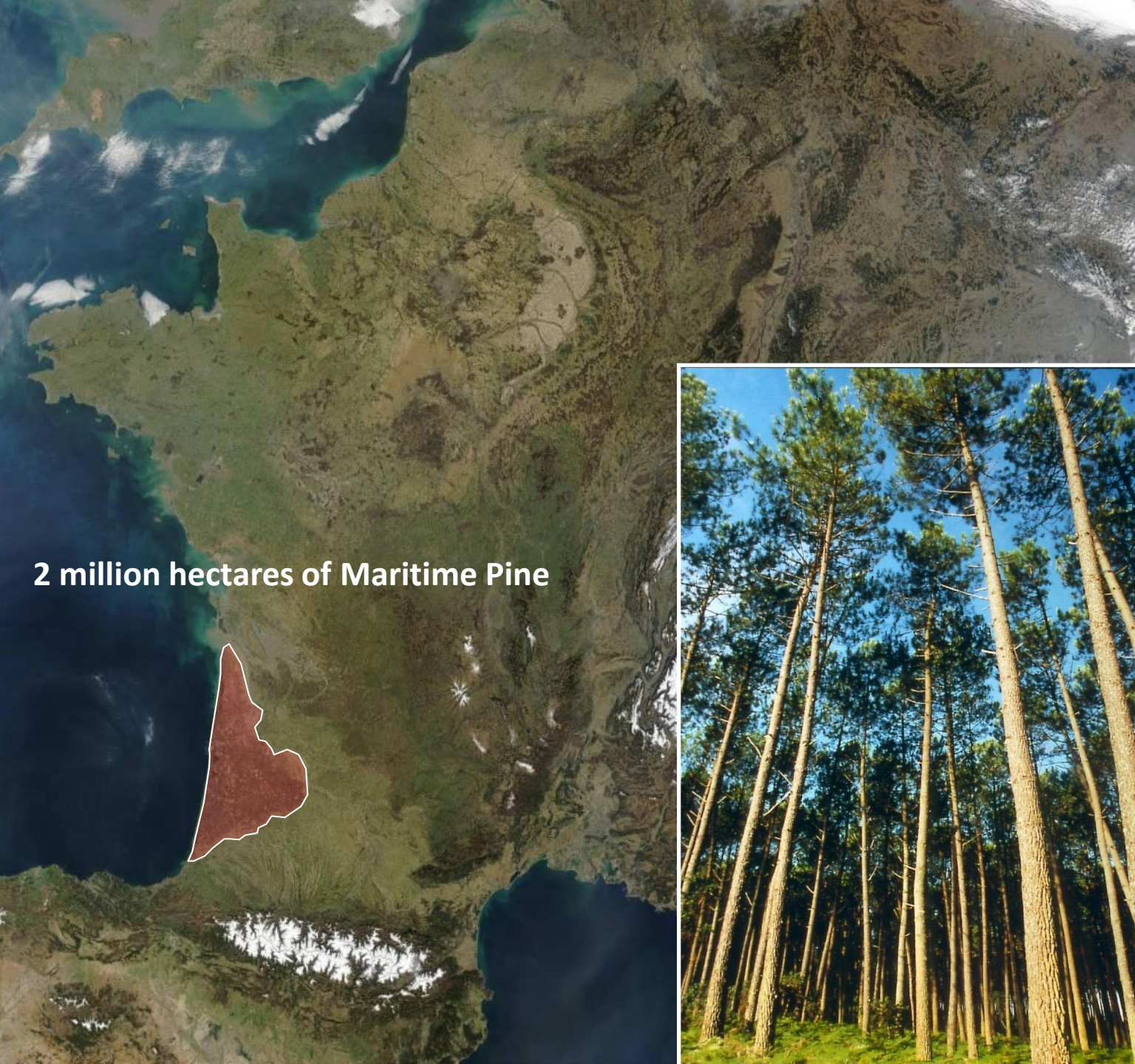
- 1 What is Pycnogenol?
- 2 What are the properties of Pycnogenol?
- 3 What are the mechanisms of action?
- 4 Exploring the research for Metabolic Syndrome and Cardiometabolic health
- 5 Exploring the research in Respiratory Health
- 6 Exploring the research in Male and Female Health

Maritime Pine (*Pinus pinaster*)

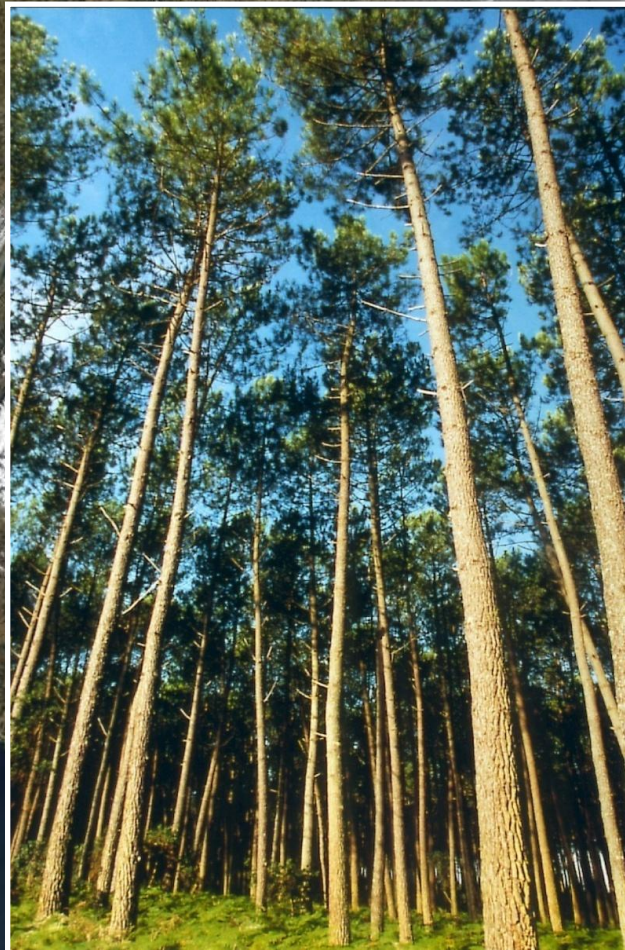
Europe's largest cultured forest is situated in the Gascogne region in Southwest France

Pycnogenol trees are grown sustainably – and are always replanted

An area free of pesticides and fertilizers



2 million hectares of Maritime Pine



Pine bark extract

- Pycnogenol® is extracted from the bark - which is surplus
- One tree can supply 15kg of bark
- The bark is removed and dried in the warehouse within 24 hours of the tree being felled
- Pycnogenol extract is prepared from fresh crushed bark from a patented extraction process.
- The purified aqueous extract → spray dried into a fine, brownish powder with an aromatic scent and astringent taste which is soluble in water





Pycnogenol is **standardized to contain 65-75% procyanidins**

The bark extracts → concentrated sources of phenolic compounds divided between:

- Monomers (catechin, epicatechin, and taxifolin)
- Condensed flavonoids (classed as procyanidins/proanthocyanidins)
Phenolic acids (cinnamic acids and other glycosides)

Well researched extract

PubMed®

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566 results << < Page 1 of 57 > >>

RESULTS BY YEAR

1947 2025

PUBLICATION DATE

☐ 1 year
☐ 5 years
☐ 10 years
☐ Custom Range

TEXT AVAILABILITY

☐ Abstract

☐ **Pycnogenol()** French maritime pine bark extract in randomized, double-blind, placebo-controlled human clinical studies.
1 Weichmann F, Rohdewald P.
Cite Front Nutr. 2024 May 2;11:1389374. doi: 10.3389/fnut.2024.1389374. eCollection 2024. PMID: 38757130 **Free PMC article.** Review.
Pycnogenol() French maritime pine bark extract is a well-known and thoroughly studied patented extract from the bark of Pinus pinaster Ait. ssp. ...The present review aims to give a comprehensive overview of currently available "gold standard" RDP trials of **Pycnogenol** ...

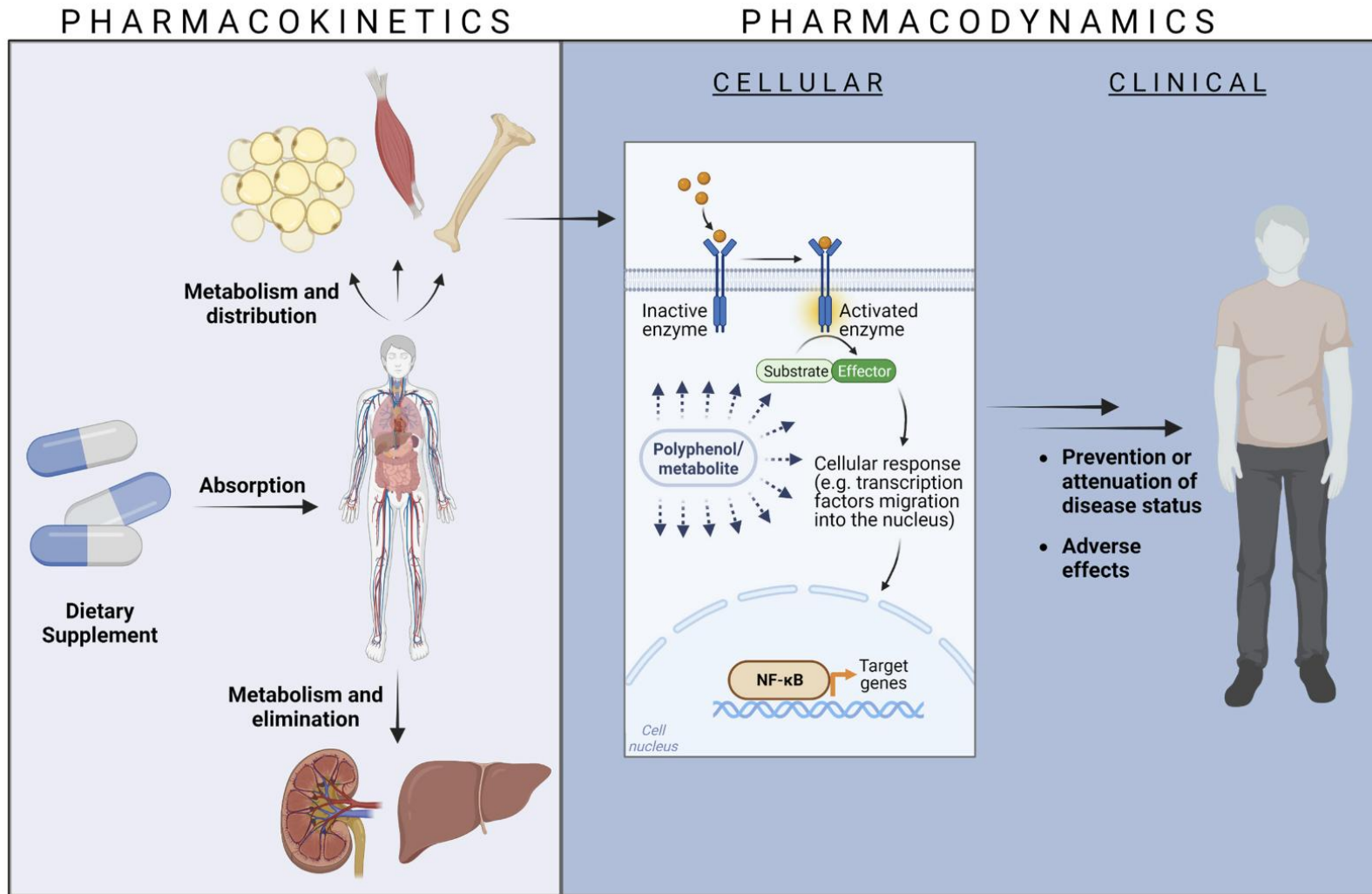
☐ **Efficacy of L-arginine and Pycnogenol in the treatment of male erectile dysfunction: a systematic review and meta-analysis.**
2 Tian Y, Zhou Q, Li W, Liu M, Li Q, Chen Q.
Cite Front Endocrinol (Lausanne). 2023 Oct 4;14:1211720. doi: 10.3389/fendo.2023.1211720. eCollection 2023. PMID: 37908749 **Free PMC article.**
BACKGROUND: The objective of this meta-analysis was to review clinical trials of the combination of **Pycnogenol** and L-arginine (PAL) in the treatment of erectile dysfunction in men and to observe the effect of PAL combined therapy on sexual function in patients with erectil ...

Pycnogenol has been studied extensively for over 40 years due to its applications in human health

- 566 results
- 420 scientific publications
- Roughly 160 clinical studies with over 10,000 participants have been reported for Pycnogenol

Bayer J, Högger P. Review of the pharmacokinetics of French maritime pine bark extract (Pycnogenol®) in humans. Front Nutr. 2024 May 2;11:1389422. doi: 10.3389/fnut.2024.1389422.

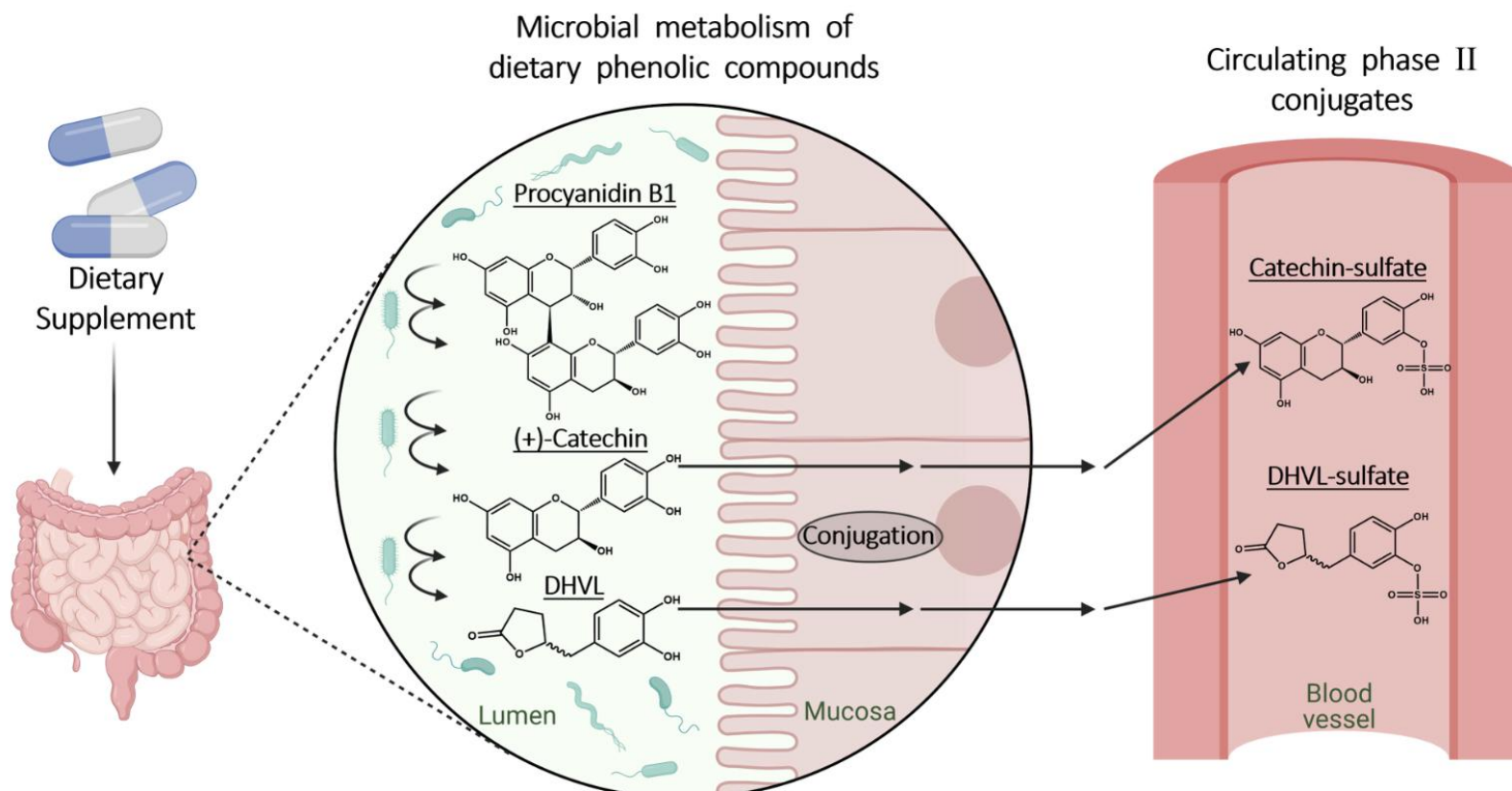
Pycnogenol in the body



Sufficiently high concentrations of dietary phenolic compounds at their site of action in tissues and organs trigger cellular events which might translate into clinical responses

Bayer J, Högger P. Review of the pharmacokinetics of French maritime pine bark extract (Pycnogenol®) in humans. Front Nutr. 2024 May 2;11:1389422. doi: 10.3389/fnut.2024.1389422.

Microbial metabolism of phenols



- Dietary phenols are extensively metabolised by gut bacteria
- Microbial metabolites of procyanidins are bioavailable and detectable in blood samples after roughly 8–10 h following ingestion

Four major Mechanisms of Action

Pycnogenol®



Antioxidant

Effects on:

- Total antioxidant status ↑
- Blood antioxidant capacity ↑
- Plasma free radicals ↓
- Oxidation of proteins, DNA and lipids ↓



Anti-inflammation

Effects on:

- Inflammation mediators, like TNF- α , 5-LOX or COX-2 ↓
- Regulators of inflammatory processes, like MMPs, NF- κ B ↓



Blood circulation

Effects on:

- Platelet aggregation ↓
- Endothelial function ↑
- Microcirculation ↑



Extracellular matrix

Effects on:

- Hyaluronic acid synthase production ↑
- Collagen generation ↑
- Elastase, Collagenase, Gelatinase (MMPs) secretion ↓

Weichmann F, Rohdewald P.
Pycnogenol® French maritime pine bark extract in randomized, double-blind, placebo-controlled human clinical studies. Front Nutr. 2024 May 2;11:1389374. doi: 10.3389/fnut.2024.1389374.

Pycnogenol acts as an antioxidant

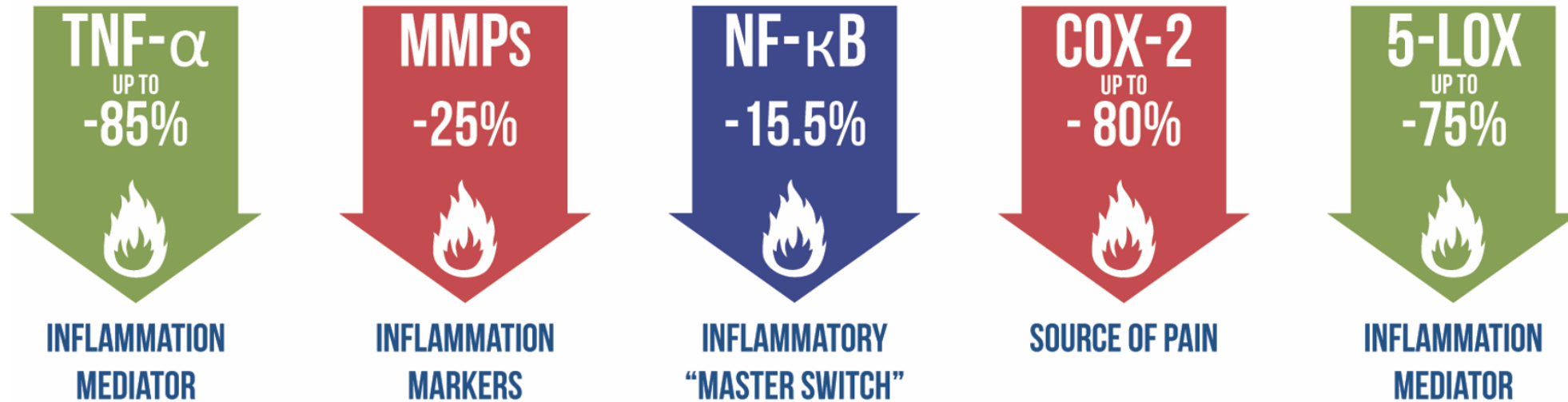
PYC acts as a regulator and protects cells against oxidative stress by:

- Being a potent free radical scavenger; neutralise ROS
- Protecting DNA from damage
- Increasing the synthesis of antioxidant enzymes
- Protecting other endogenous antioxidants (vitamin C, vitamin E, and glutathione) from oxidative damage
- By reducing ROS and RNS, pycnogenol indirectly dampens activation of redox-sensitive transcription factors such as NF- κ B - lowers production of inflammatory mediators (e.g., COX-2, iNOS, TNF- α , IL-1 β), which otherwise sustain oxidative stress.

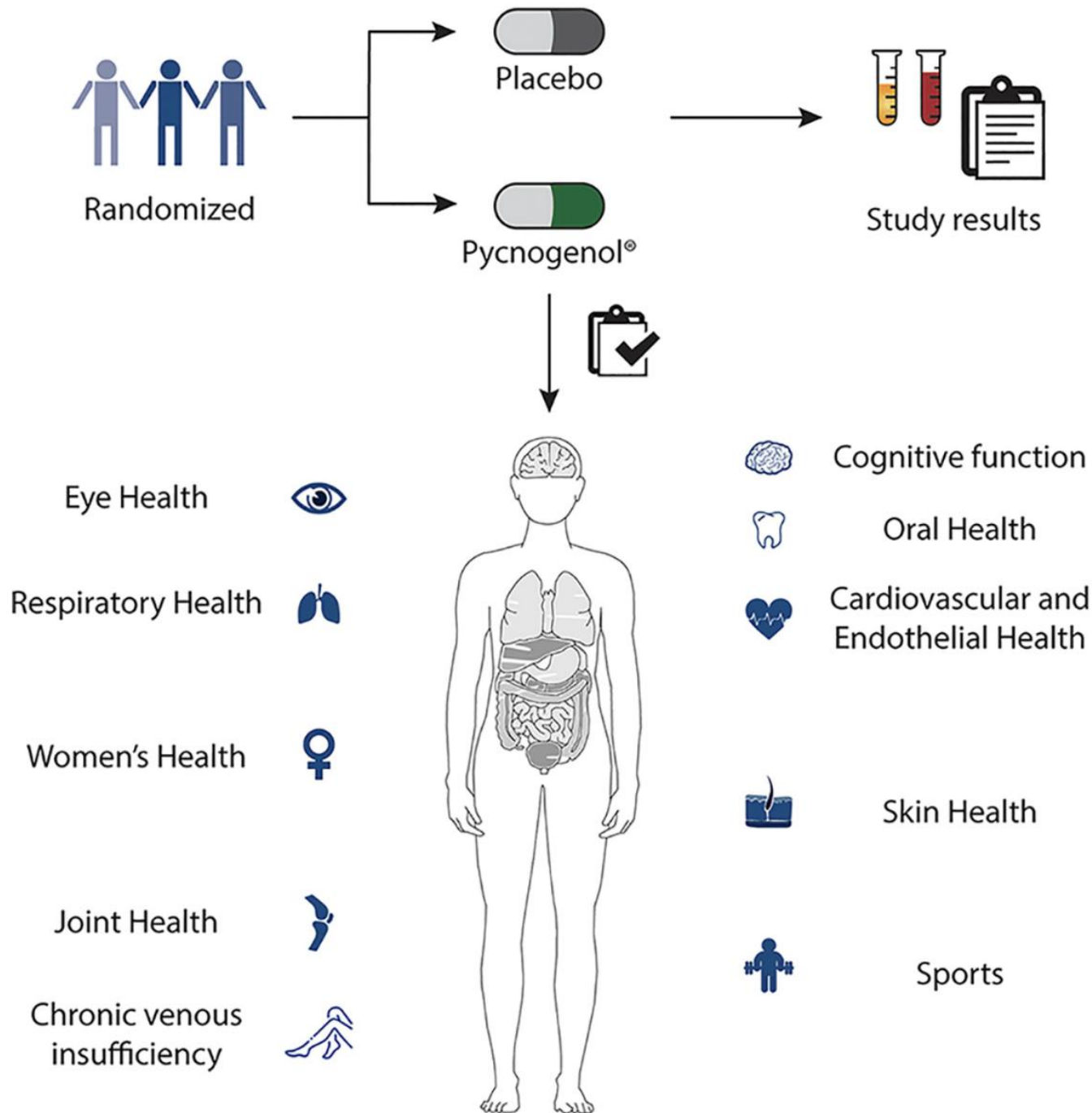
Simpson T, Kure C, Stough C. Assessing the Efficacy and Mechanisms of Pycnogenol® on Cognitive Aging From *In Vitro* Animal and Human Studies. Front Pharmacol. 2019 Jul 3;10:694. doi: 10.3389/fphar.2019.00694.

Pycnogenol - a natural anti-inflammatory

These are the mechanisms:



Canali R et al., The anti-inflammatory pharmacology of Pycnogenol in humans involves COX-2 and 5-LOX mRNA expression in leukocytes. *Int Immunopharmacol*. 2009 Sep;9(10):1145-9.
Grimm T et al., Antioxidant activity and inhibition of matrix metalloproteinases by metabolites of maritime pine bark extract (pycnogenol). *Free Radic Biol Med*. 2004 Mar 15;36(6):811-22.
Grimm T et al., Inhibition of NF-kappaB activation and MMP-9 secretion by plasma of human volunteers after ingestion of maritime pine bark extract (Pycnogenol). *J Inflamm (Lond)*. 2006 Jan 27;3:1.
Schäfer A, et al., Inhibition of COX-1 and COX-2 activity by plasma of human volunteers after ingestion of French maritime pine bark extract (Pycnogenol). *Biomed Pharmacother*. 2006 Jan;60(1):5-9.



Areas of clinical research

Pycnogenol supplementation has been shown in randomised, double-blind, placebo-controlled human clinical trials to beneficially affect these areas of health

Weichmann F, Rohdewald P. Pycnogenol® French maritime pine bark extract in randomized, double-blind, placebo-controlled human clinical studies. *Front Nutr.* 2024 May 2;11:1389374. doi: 10.3389/fnut.2024.1389374

Major fields of application



SKIN CARE

Helps protect the skin against free radicals generated by UV, stress and pollution, and maintain its elasticity and hydration.



EYE HEALTH

Supports healthy retinal capillaries for better vision.



JOINT CARE

Provides support for better flexibility and mobility of joints. Natural anti-inflammatory.



HEART AND CIRCULATION

Helps maintain healthy circulation, blood flow and blood pressure.



WOMEN'S HEALTH

Reduces menstrual disorder, menopausal and endometriosis symptoms.



COGNITIVE HEALTH

Improves memory, as well as numerical and spatial capacities.



RESPIRATORY HEALTH

Inhibits pro-inflammatory mediators, reduces edema and supports healthy respiratory function.



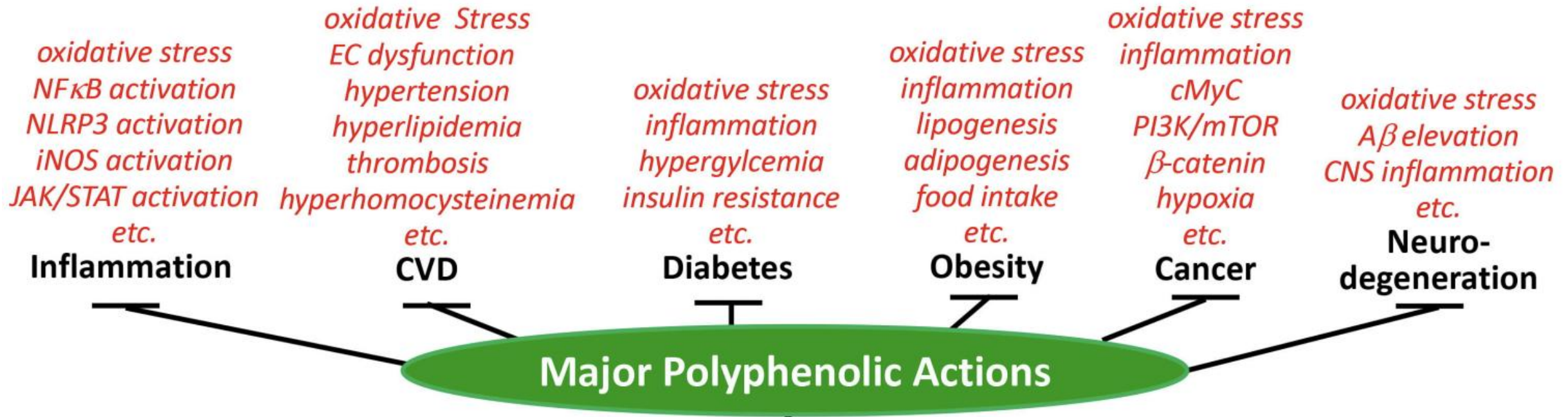
SPORTS

Supports optimal muscle performance, better recovery and reduces muscular pain.

Addressing Chronic disease

- “As **inflammation and oxidative stress** play a pivotal role in the pathophysiology of **chronic diseases** and their mechanisms are closely linked, **reducing the inflammatory cascade is associated with the decreased rate of oxidation.**
- Therefore, it seems that **controlling the inflammatory process and oxidative stress could be effective in the management of chronic diseases.**”

Polyphenolic Actions in Chronic disease



Metabolic Syndrome

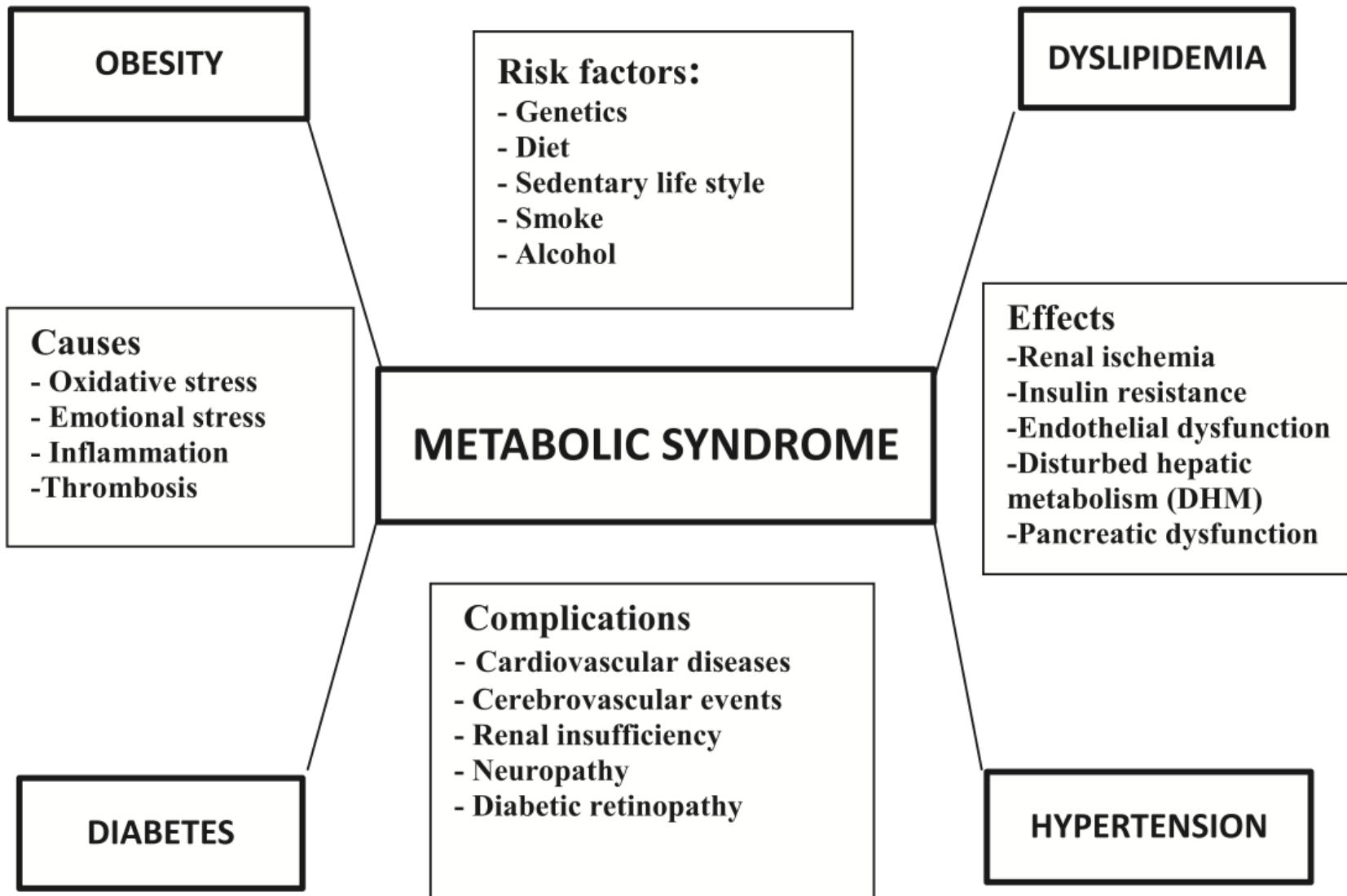
Metabolic syndrome is diagnosed when an individual has 3/5 risk factors:

- Large waist circumference: >40 inch/94cm (M); >35 inch/80cm (F)
- High blood pressure/hypertension: >130/85 mm Hg
- High fasting blood sugar/hyperglycaemia: Fasting glucose >5.6 mmol/L or 100mg/dl
- High triglycerides / dyslipidaemia: TG> 1.7mmol/L or 150mg/dl
- Low HDL cholesterol: < 09.mmol/L or 40mg/dl

Waist-Hip Ratio: >90 (M); >0.85 (F); BMI > 30

Oxidative stress and an elevated inflammatory state are some of the underlying mechanisms behind the risk of MetSyn

Metabolic Syndrome



Basic components,
risk factors,
causes, effects and
complications of
metabolic
syndrome

Gulati OP. Pycnogenol® in Metabolic Syndrome and Related Disorders. Phytother Res. 2015 Jul;29(7):949-68. doi: 10.1002/ptr.5341.

Open-Label Controlled Study (2013)

Pycnogenol Supplementation Improves Health Risk Factors in Subjects with Metabolic Syndrome

Participants	64 subjects (45-55yrs) presenting with all 5 risk factors of MetSyn 66 controls
Methods	50mg x 3 /day of Pycnogenol for 6 months
Measures	Waist circumference, BMI, weight, TG, BP, HDL, FG Plasma Free Radicals (PFRs) Baseline, 3 months and 6 months
Findings	Improvements in all measures

Belcaro G, et al., Pycnogenol® supplementation improves health risk factors in subjects with metabolic syndrome. *Phytother Res.* 2013 Oct;27(10):1572-8. doi: 10.1002/ptr.4883.

Pycnogenol and MetSyn

150mg Pycnogenol per day – 6 mths

Results:

- Decreased waist circumference
- Decreased TG levels
- Decreased BP
- Increased HDL
- Lowered fasting glucose
- Decreased Plasma Free Radicals

Reducing the production of reactive oxygen species is hypothesized to assist in the normalization of metabolic pathway that leads to the onset of diabetes, endothelial dysfunction and CVD

Pycnogenol and MetSyn

Table 2. Variation in central obesity, Triglycerides, HDL cholesterol, blood pressure and blood glucose. The asterisk (*) indicates statistical significant changes compared to baseline, the number sign (#) indicates statistical significant difference between Pycnogenol and control.

		Inclusion	3 Months		6 Months		
		Pycnogenol N = 76	Control N = 78	Pycnogenol N = 64	Control N = 66	Pycnogenol N = 64	Control N = 66
1. Central obesity							
Waist circumference	Male	106.4 ± 2.2	105.8 ± 3.2	98.8 ± 2.3	101.3 ± 2.3	98.3 ± 2.1*#	100.2 ± 3.1
	Female	90.9 ± 1.6	91.2 ± 3.1	84.6 ± 2.1	89.2 ± 3.2	83.6 ± 2.2*#	87.3 ± 2.1
BMI		26.7 ± 1.2	26.61 ± 1.4	--	--	25.1 ± 1.2	26.3 ± 1.3
WEIGHT		68.9 ± 2.4	68.3 ± 2.9	--	--	66.2 ± 2	67.2 ± 2.2
2. TG level:		189.3 ± 9.3	194.3 ± 12.2	143.23 ± 6.2	179.4 ± 11.1	143.2 ± 12.2*#	182.3 ± 7.6
3. HDL cholesterol	Male	35.4 ± 2.9	35.9 ± 2.4	41.2 ± 3.3	37.4 ± 3.2	44.5 ± 3.3*#	39.3 ± 3.5
	Female	44.5 ± 3.9	45.5 ± 3.7	53.3 ± 2.2	45.9 ± 3.6	55.4 ± 3.9*#	46.1 ± 3.4
4. Blood pressure							
Systolic		144 ± 3.9	143.2 ± 4.4	138.2 ± 3.5	141.3 ± 2.1	137.4 ± 4.5*#	142.3 ± 3.2
Diastolic		87.6 ± 2.7	87.2 ± 2.4	82.4 ± 2.8	83.4 ± 4.1	82.3 ± 3.1*#	85.2 ± 3.3
5. Fasting glucose		123.2 ± 8.6	124.3 ± 7.2	106.4 ± 5.3	118.3 ± 6.3	105.3 ± 2.5*#	119.3 ± 7.1

Reduction of CV risk factors in T2DM subjects

- 12 week, RDB PC trial (2008)
- 24 subjects in EG and 24 subjects in control (40-75 yrs)
- Receiving ACE inhibitors for HBP
- Measured BP, heart rate
- Blood markers: plasma endothelin-1, LDL-C, HbA1c, glucose.
- 125mg Pycnogenol daily

After 12 weeks of supplementation, Pycnogenol resulted in improved diabetes control, lowered CVD risk factors, and reduced antihypertensive medicine use vs controls.



Available online at www.sciencedirect.com

ScienceDirect

Nutrition Research 28 (2008) 315–320

Nutrition
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Reduction of cardiovascular risk factors in subjects with type 2 diabetes by Pycnogenol supplementation

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^bInstitute of Pharmaceutical Chemistry, University of Münster, Münster 48149, Germany

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Received 26 November 2007; revised 29 February 2008; accepted 7 March 2008

Abstract

Patients with type 2 diabetes are at considerable risk of excessive morbidity and mortality from cardiovascular disease (CVD). We investigated the clinical effectiveness of Pycnogenol, a flavonoid-rich dietary supplement, in reducing antihypertensive medication use and CVD risk factors in subjects with type 2 diabetes. Forty-eight individuals were enrolled in a randomized, double-blind, placebo-controlled trial with parallel-group design. Patients were diagnosed with both type 2 diabetes and mild to moderate hypertension and were undergoing treatment with angiotensin-converting enzyme (ACE) inhibitors. Subjects were randomly assigned to receive either Pycnogenol pill (125 mg daily) or matched placebo for 12 weeks. According to the values of blood pressure (BP) measured at 2-week intervals, the pretrial ACE inhibitor dosage was left unchanged, reduced by 50%, or brought back to the pretrial dosage until a stable BP was obtained. Fasting plasma glucose, low-density lipoprotein (LDL) cholesterol, glycosylated hemoglobin (HbA1c), serum endothelin-1, and urinary albumin were evaluated monthly. Pycnogenol treatment achieved BP control in 58.3% of subjects at the end of the 12 weeks with 50% reduction in individual pretrial dose of ACE-inhibitors ($P < .05$). Plasma endothelin-1 decreased by 3.9 pg/mL in Pycnogenol-treated group vs 0.5 pg/mL increase in control group ($P < .001$). Mean HbA1c dropped by 0.8% in Pycnogenol-treated group ($P < .05$), whereas it decreased by 0.1% in control group. Fasting plasma glucose declined by 23.7 mg/dL in Pycnogenol-treated group vs 5.7 mg/dL in control group ($P < .0001$). Low-density lipoprotein cholesterol improved significantly in Pycnogenol-treated group, declining by 12.7 mg/dL ($P < .001$). A significant decrease in urinary albumin level was observed at week 8 compared with the control group ($P < .05$). However, this reduction was not significant at 12th week. After 12 weeks of supplementation, Pycnogenol resulted in improved diabetes control, lowered CVD risk factors, and reduced antihypertensive medicine use vs controls. © 2008 Elsevier Inc. All rights reserved.

Keywords: Diabetes; Hypertension; Pycnogenol; Flavonoid; Antioxidant; Human

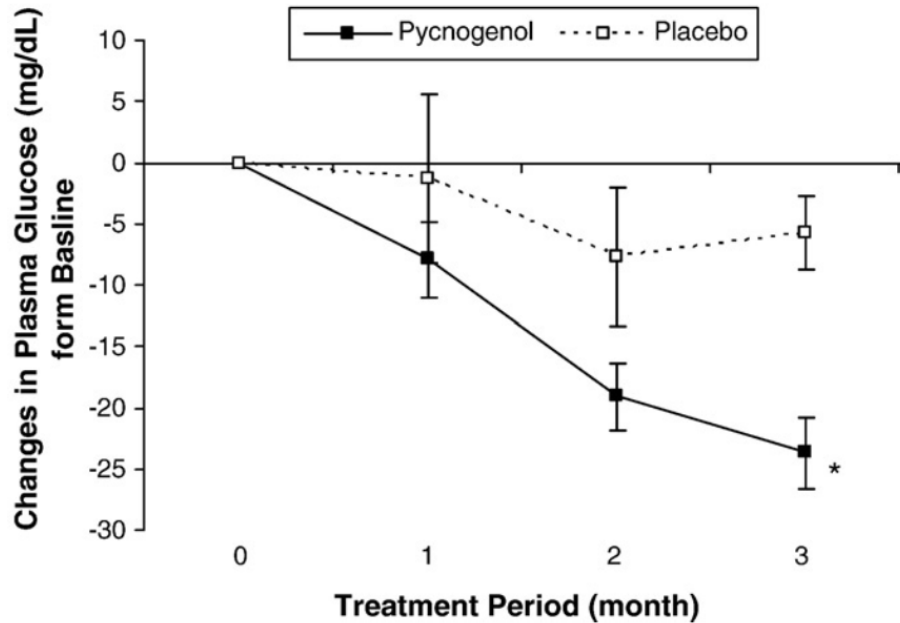
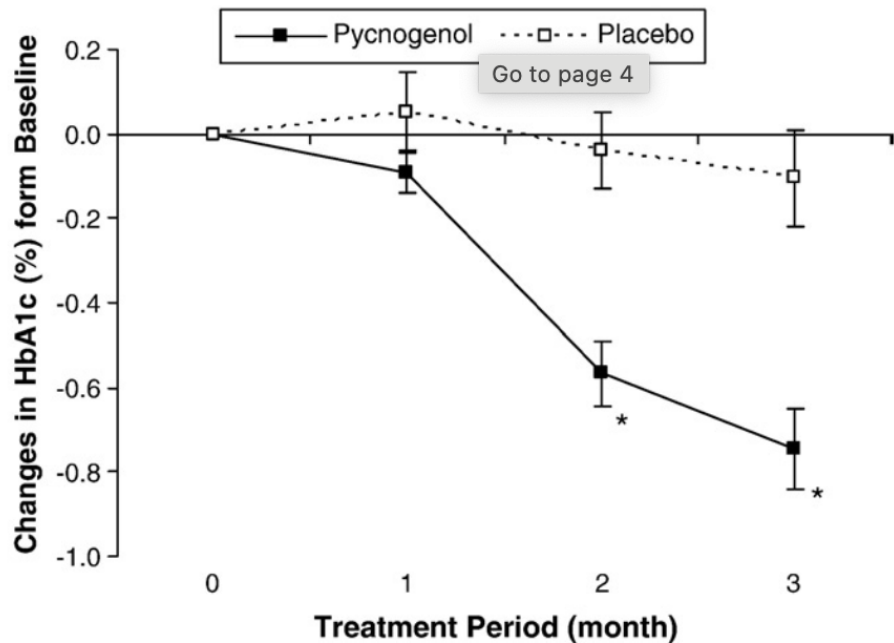
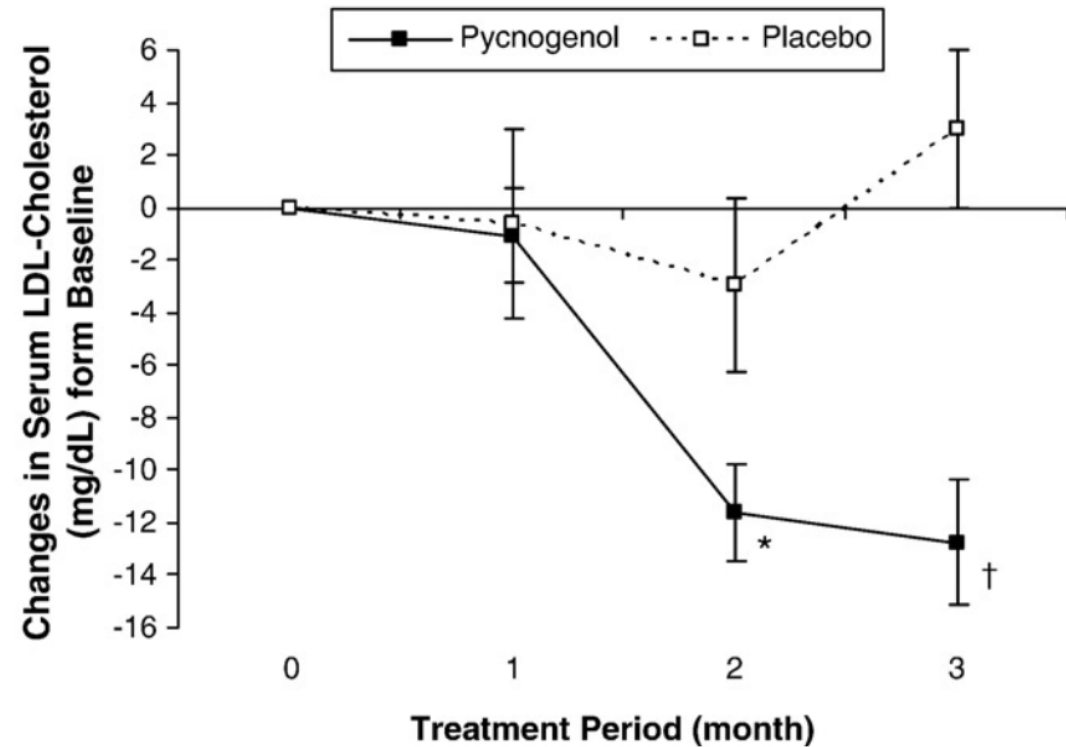
Abbreviations: CVD, cardiovascular disease; ACE inhibitors, angiotensin-converting enzyme inhibitors; HbA1c, glycosylated hemoglobin; LDL-C, low-density lipoprotein-cholesterol; BP, blood pressure; NO, nitric oxide.

1. Introduction

Diabetes mellitus affects approximately 20 million people in the United States, approximately 7% of the US population [1]. It is expected to increase by 50% to 70%

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E-mail address: rwatson@email.arizona.edu (R.R. Watson).

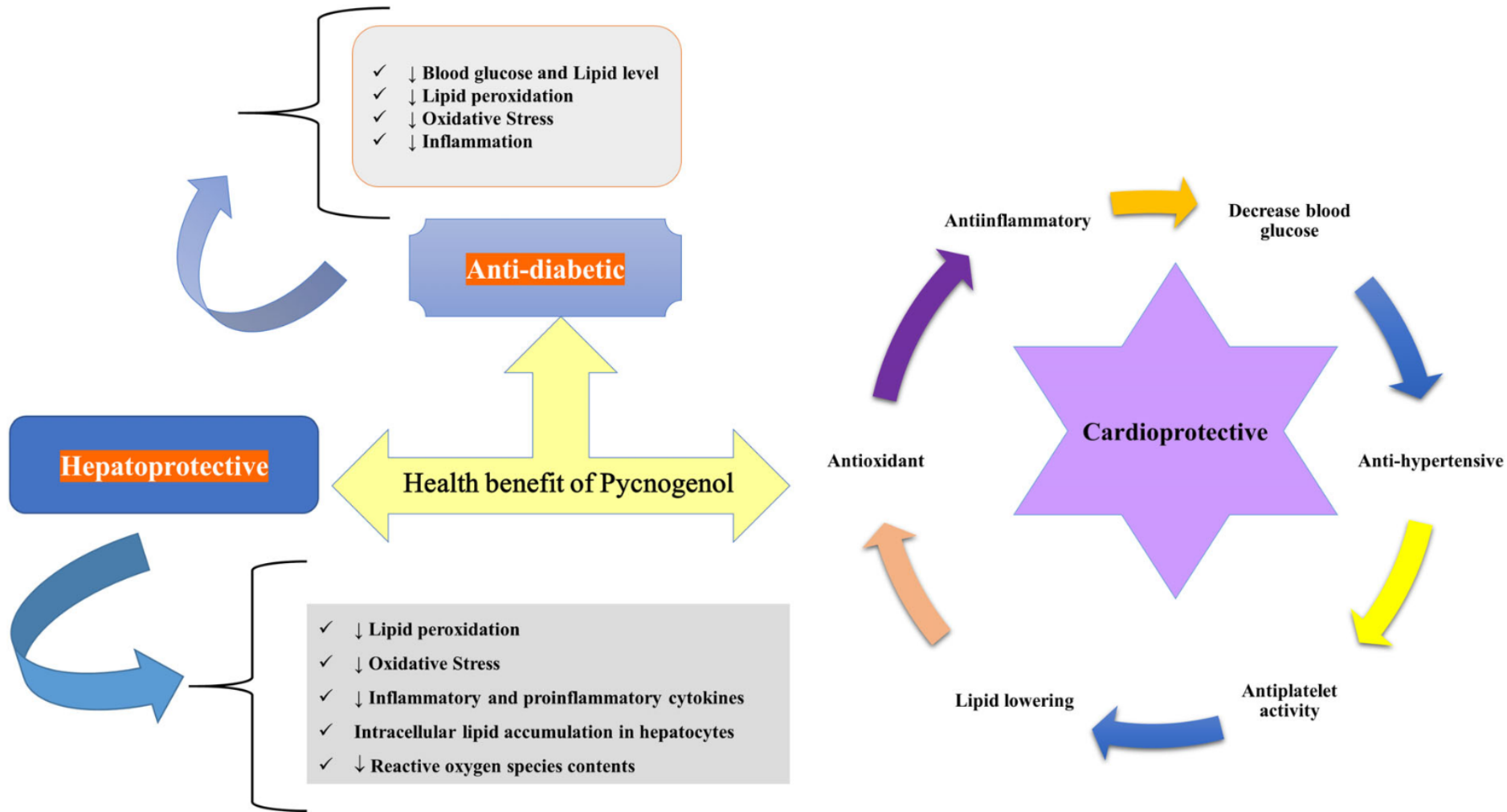


And a marked decrease of 17.8% occurred in serum endothelin-1 -> endothelial-derived vasoconstrictor peptide - plays an important role in modulating vascular tone

Zibadi S, Reduction of cardiovascular risk factors in subjects with type 2 diabetes by Pycnogenol supplementation. Nutr Res. 2008 May;28(5):315-20. doi: 10.1016/j.nutres.2008.03.003.

CardioMetabolic support

Health benefits of Pycnogenol



Nattagh-Eshtivani E, et al., The role of Pycnogenol in the control of inflammation and oxidative stress in chronic diseases: Molecular aspects. *Phytother Res.* 2022 Jun;36(6):2352-2374. doi: 10.1002/ptr.7454

Pycnogenol may help normalise cardiometabolic parameters

In a 2019 systemic review / meta-analysis of 24 RCTs & 1594 subjects

- Pycnogenol supplementation was shown to significantly increase HDL-c whilst reducing:

- Fasting blood glucose
- Glycated haemoglobin
- LDL cholesterol
- Systolic Blood Pressure / Diastolic Blood Pressure
- Body mass index

Doses in reviews range from 50 mg – 300 mg/day

Recent reviews conclude positive effect of Pycnogenol on blood pressure control

Pourmasoumi M, et al., Effect of pycnogenol su67-76. doi: 10.1002/ptr.6515. Epub 2019 Oct 21. PMID: 31637782.

Zhang Z, et al., Effect of Pycnogenol Supplementation on Blood Pressure: A Systematic Review and Meta-analysis. Iran J Public Health. 2018 Jun;47(6):779-787.

plementation on blood pressure: A systematic review and meta-analysis of clinical trials. Phytother Res. 2020 Jan;34(1):

Fogacci F, et al., Effect of Pycnogenol on Blood Pressure: Findings From a PRISMA Compliant Systematic Review and Meta-Analysis of Randomized, Double-Blind, Placebo-Controlled, Clinical Studies. Angiology. 2020 Mar;71(3):217-225.

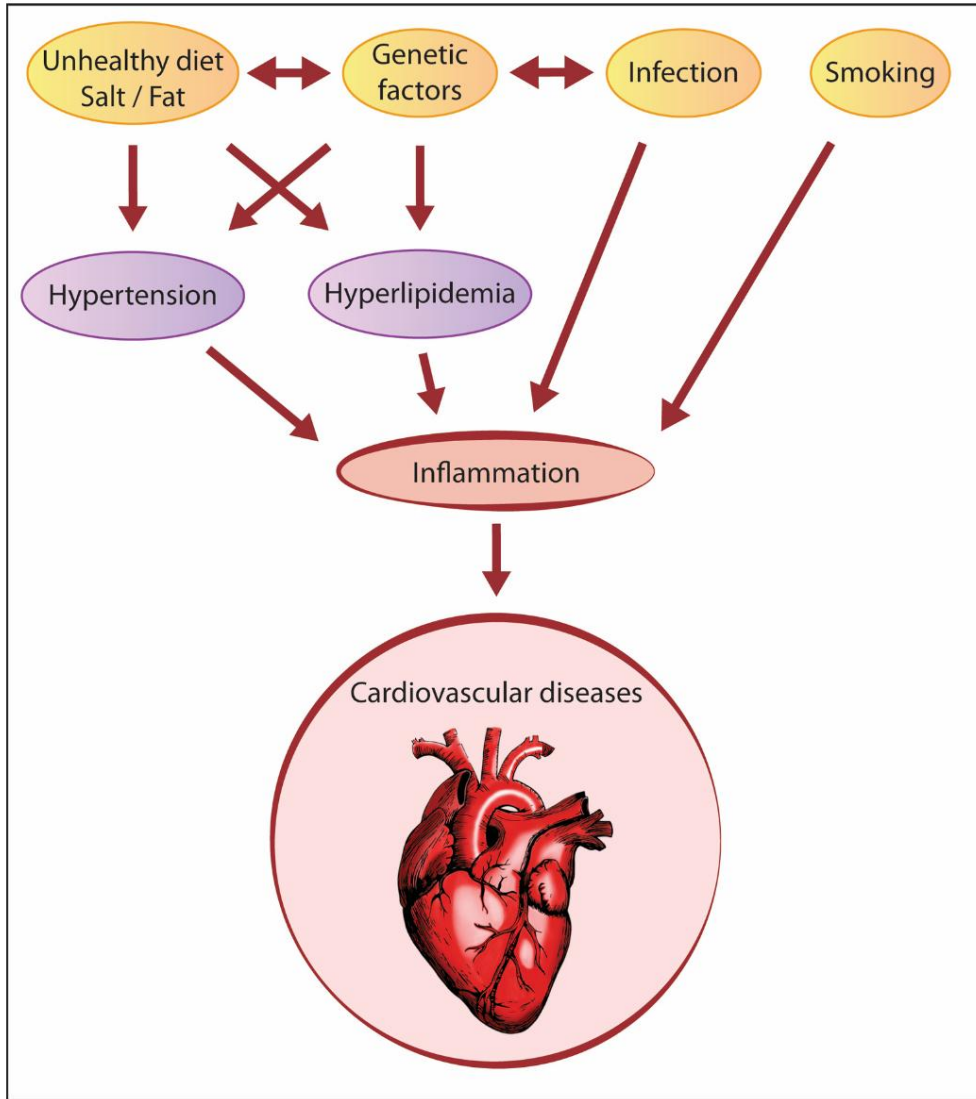
- A **2018 review** of 9 trials (549 participants) supplementing 150 mg/d to 200 mg/d vs control reported a reduction in systolic and diastolic BP
 - Particularly among hypertensive participants or those who received intervention for more than 12 weeks
- A **2020 review** of 12 clinical trials (922 participants) found Pycnogenol to be effective particularly when supplemented for 12+ weeks
- But another **2020 review** of 7 trials (626 participants) did not find the BP reduction to reach significance

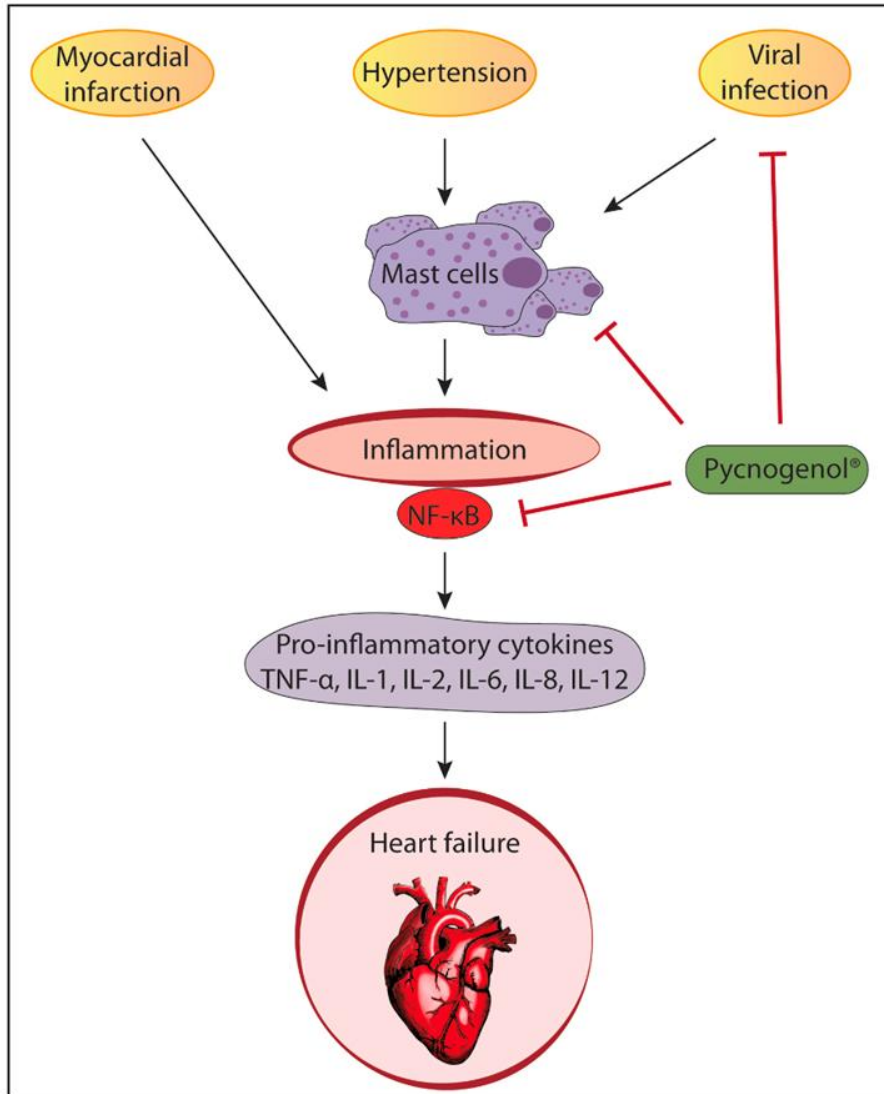
Systematic review of herbal supplements on blood pressure control

- A **2022 SR review** and meta-analysis of several dietary supplements on BP
- Including 31 RCTs (1250 participants)
- **Pycnogenol, resveratrol, beetroot juice, barberry, bergamot, or cherry juice**
- Overall, the results demonstrated that most of them can be clinically effective in decreasing BP and improving cardiovascular function in different patients
- However, the supplementation of pycnogenol can bring the most benefits in the prevention of blood pressure.

Targeting inflammation in preventing CVD

- Risk factors of cardiovascular diseases (CVDs) and inflammation
- Hypertension & hyperlipidemia → risk factors of CVDs → inflammation in the heart and vessels
- Unhealthy diet & genetic factors → development of hypertension & hyperlipidemia → inflammation
- Smoking and infection → inflammation → CVDs.





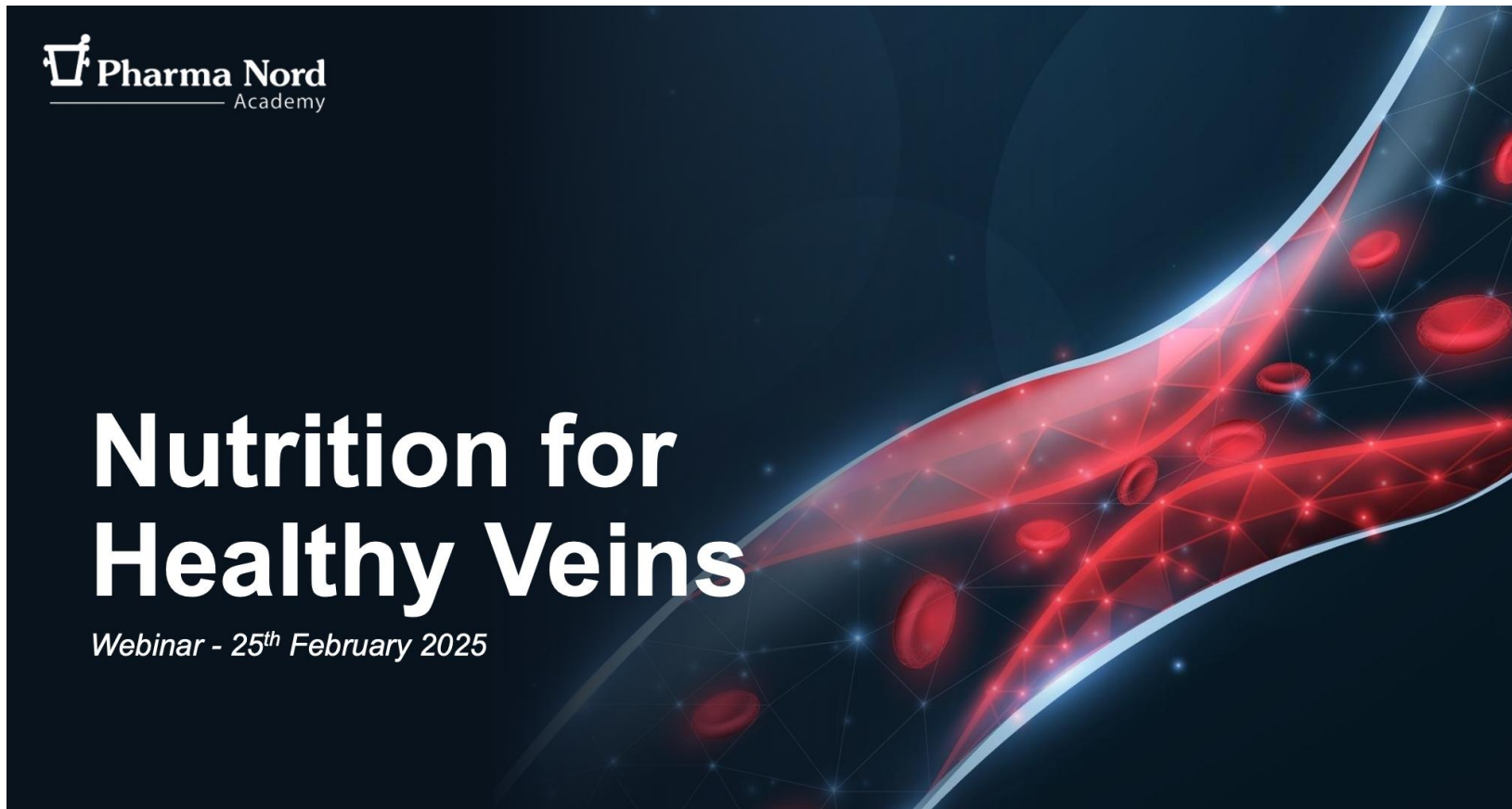
Targeting inflammation in preventing CVD

- Potential mechanisms of PYC on heart failure
- PYC may prevent heart failure by
 - inhibiting inflammation by multiple pathways such as antiviral effects and inhibiting activation of NF-κB and mast cells

Research update – 2025 Review

- Does supplementation with pine bark extract (PBE) improve cardiometabolic risk factors?
- Systematic Review and Meta-analysis, 27 RCTs with 1,685 participants
- **Supplementation with PBE may ameliorate specific cardiometabolic risk factors**, as indicated by reductions in body weight, blood pressure, fasting blood sugar, LDL, and HbA1c levels.
- This approach can be regarded as an adjunct therapeutic strategy for CMS management.
- Further high-quality trials with larger sample sizes and longer durations are required to validate these findings.

Previous webinar



Available in our
**practitioner webinar
library**
(pharmanord.co.uk/pro)

Pycnogenol in Respiratory Health



Pycnogenol in allergy research

Airway inflammation is an NB feature in allergic asthma

- **2013 cell study** evaluated effects of Pycnogenol on airway inflammation
- In LPS-stimulated cells, Pycnogenol:
 - Decreased nitric oxide production, reduced interleukin (IL)-1 β & IL-6 levels
 - Reduced expression of inducible nitric oxide synthase (iNOS) & matrix metalloproteinase (MMP)-9
 - Enhanced expression of hemeoxygenase (HO)-1

Shin IS, Shin NR, Jeon CM, et al. Inhibitory effects of Pycnogenol® (French maritime pine bark extract) on airway inflammation in ovalbumin-induced allergic asthma. *Food Chem Toxicol.* 2013;62:681-686. doi:10.1016/j.fct.2013.09.032

- The same study then did an experiment using an animal model of ovalbumin (OVA)-induced allergic asthma, Pycnogenol:
 - Decreased inflammatory cell count & levels of **IL-4, IL-5, IL-13, & Ig E**
- In conclusion, these results suggest that PYC has potential as a therapeutic agent for the treatment of allergic asthma

Pycnogenol in asthma management

Study design:

- Efficacy of Pycnogenol taken for 6 months -> improving allergic asthma management (mite in house dust)
- **76 patients**; dose - **50mg twice a day** for 6 months (in addition to inhalation corticosteroid (ICS)) -> allowed a reduction in dosage and frequency of ICS administration compared to the group taking ICS only

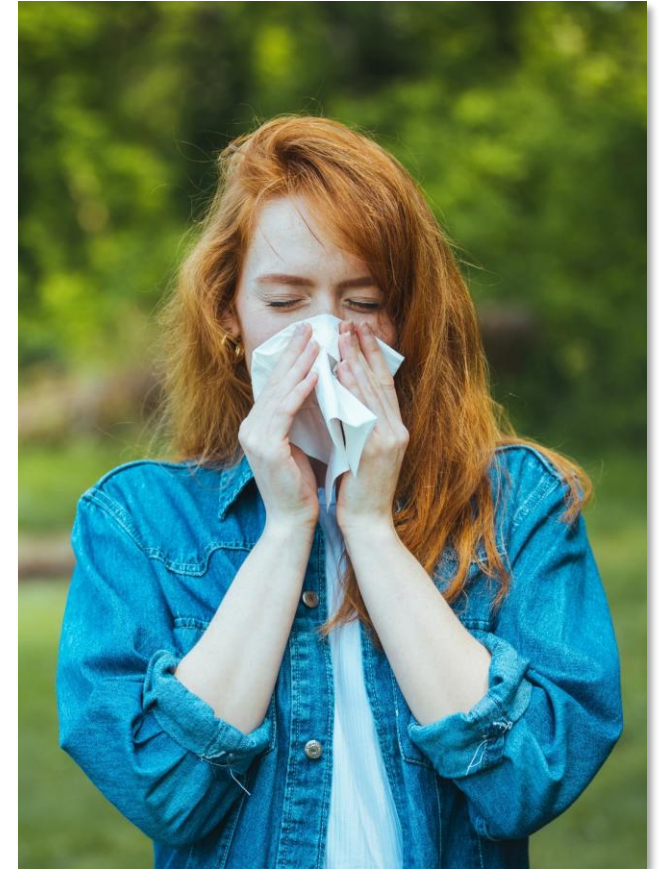
Results: 55% of patients taking Pycnogenol improved as judged by passing to a lower ICS dose step.

- No deterioration (passage to a higher ICS therapeutic step) was observed in the Pycnogenol group, whereas in 18.8% of patients exclusively on corticosteroids a deterioration requiring a higher dosage step was observed.
- All parameters were statistical significantly improved in Pycnogenol + ICS group

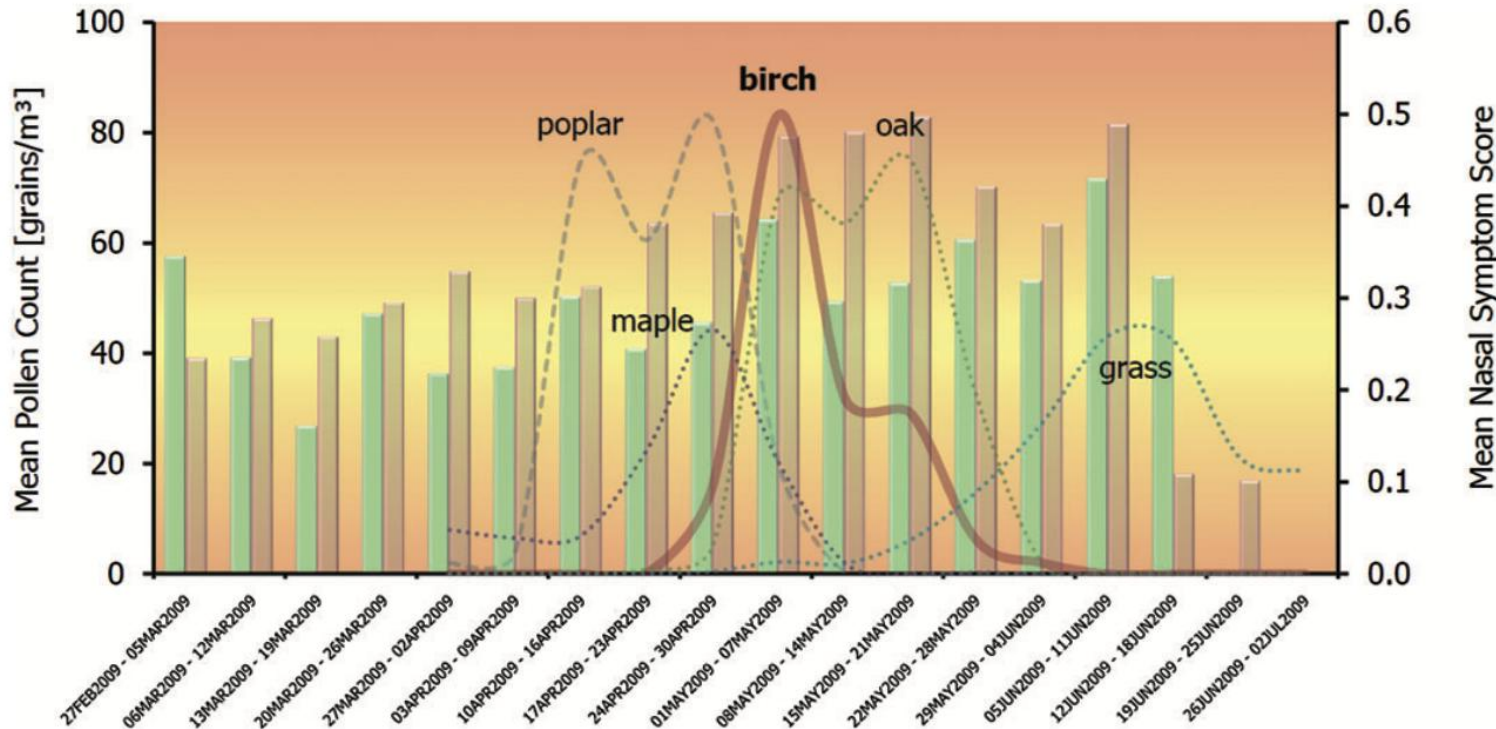
Conclusion: Pycnogenol administration was effective for better control of signs and symptoms of allergic asthma and reduced the need for medication.

Pycnogenol in hay fever

- Double-blind, placebo-controlled trial investigated Pycnogenol for relieving allergic rhinitis (birch pollen) symptoms
- 2008 – 19 subjects started treatment 3 weeks prior to the onset of birch pollen season in Ontario, Canada
- Improvement of eye and nasal symptoms with Pycnogenol, there was no significance versus placebo
- 2009 - 39 subjects were treated 5-8 weeks prior to 2009 birch allergy season
- Patients were permitted to use non-prescription (OTC) antihistamines as rescue medication



Pycnogenol in hayfever



Weekly nasal symptom scores – Pycnogenol (green bars); placebo (red bars). The occurrence of pollen species from poplar, maple, oak, grass during the allergy season are shown birch pollen density highlighted

Results compared to placebo:

- Lower scores for eye (-35%) & nasal (-20.5%) symptoms
- In succession of the allergy season, birch specific IgE increased by 31.9% in the placebo group compared with only 19.4% in the Pycnogenol group

Conclusion:

- Best results gained by taking Pycnogenol 7-8 weeks ahead of allergy season

Pycnogenol in MaleHealth



Clinical trial: Pycnogenol in BPH

Benign Prostatic Hypertrophy (BPH)

75 men with BPH were split into 3 groups, each taking daily for 8 weeks:

- Pycnogenol 150mg – 22 men
- Placebo – 27 men
- Dutasteride* (0.5mg) and finasteride* (5mg) - 26 men

*Commonly prescribed medication for BPH

BPH symptoms were monitored throughout

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Online version at <http://www.minervamedica.it>

Minerva Medica 2018 August;109(4):280-4
DOI: 10.23736/S0026-4806.18.05572-6

ORIGINAL ARTICLE

Benign prostatic hypertrophy: Pycnogenol® supplementation improves prostate symptoms and residual bladder volume

Andrea LEDDA^{1,2}, Gianni BELCARO^{1,2*}, Beatrice FERAGALLI^{1,2}, Umberto CORNELLI^{1,2}, Mark DUGALL^{1,2}, Marcello CORSI^{1,2}, Maria R. CESARONE^{1,2}

¹IRVINE3 Labs, Chieti-Pescara University, Chieti, Italy; ²International Agency for Pharma Standard Supplements (IAPPS), Chieti, Italy

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ABSTRACT

BACKGROUND: The aim of this study was to evaluate the efficacy of Pycnogenol® supplementation in terms of safety and tolerability in the setting of preclinical or borderline, initial symptoms of benign prostatic hypertrophy (BPH), in otherwise healthy subjects, using Pycnogenol® over a period of 60 days.

METHODS: Seventy-five healthy men with symptoms and signs of initial BPH were included. The subjects were divided into three groups: 1) control group using only the standard management (SM); 2) a group using SM plus Pycnogenol® 150 mg/day; 3) a group using standard pharmacological management.

RESULTS: BPH symptoms like emptying, frequency, intermittency, urgency, weak flow, straining, nocturia, were all significantly improved with Pycnogenol® ($P < 0.05$) and the difference with both control groups was statistically significant ($P < 0.05$).

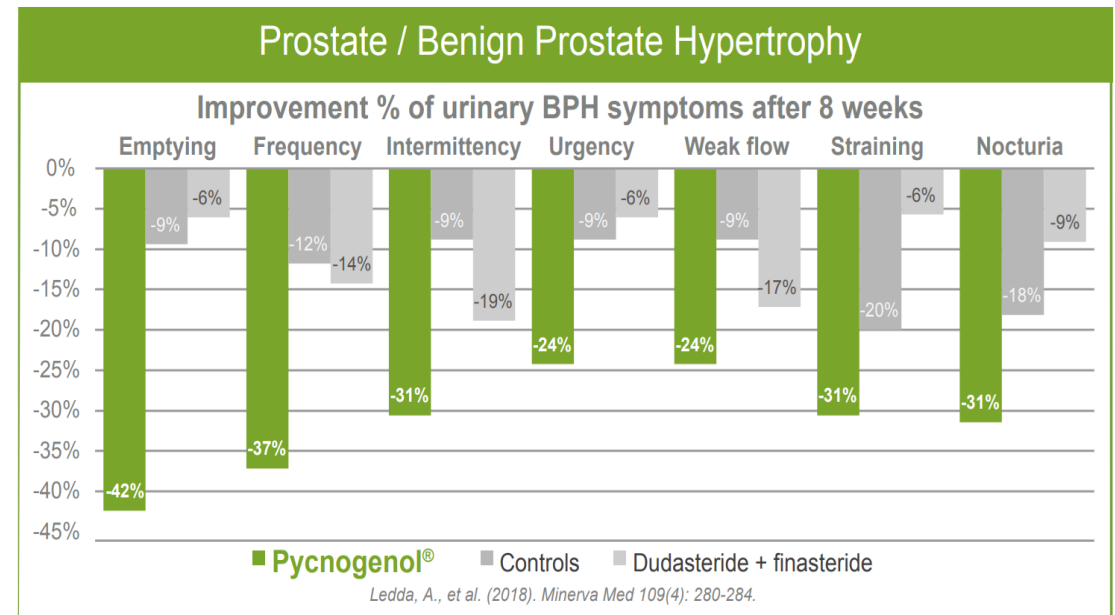
CONCLUSIONS: Pycnogenol® may be an important option for self-management of BPH in otherwise healthy men.

(Cite this article as: Ledda A, Belcaro G, Feragalli B, Cornelli U, Dugall M, Corsi M, et al. Benign prostatic hypertrophy: Pycnogenol® supplementation improves prostate symptoms and residual bladder volume. Minerva Med 2018;109:280-4. DOI: 10.23736/S0026-4806.18.05572-6)

Ledda, A Benign prostatic hypertrophy: Pycnogenol® supplementation improves prostate symptoms and residual bladder volume. Minerva Med. 2018 Aug;109(4):280-284. doi: 10.23736/S0026-4806.18.05572-6.

Clinical trial: Pycnogenol in BPH

- Pycnogenol group demonstrated **greater improvements** compared to both placebo & medicine groups in every symptom
- The Pycnogenol group demonstrated increased antioxidant status, whilst medicine group demonstrated high levels of oxidative stress
- **Author's summary:** Pycnogenol is effective and supportive of overall health



Pycnogenol and Erectile Dysfunction (ED)

- 2023 Systematic Review and meta-analysis
- 3 studies; 184 patients
- **Objective:** Review clinical trials of the combination of Pycnogenol and L-arginine (PAL) in the treatment of ED and observe the effects on sexual function
- **Results** showed improved sexual desire, orgasmic function and intercourse satisfaction.
- There was no statistical change of testosterone in the groups.

Conclusions:

The combined treatment of PAL had a significant effect on improving sexual function in aged patients with mild to moderate ED.

Pycnogenol (as Prelox®) for male sexual health

- Prelox describes a specific complex designed to improve vasodilation and support sexual function
- It combines Pycnogenol with the amino acids L-arginine and taurine:
 - L-arginine is associated with an increase in nitric oxide synthase (eNOS) **nitric oxide production** and acts alongside Pycnogenol to increase vasodilation

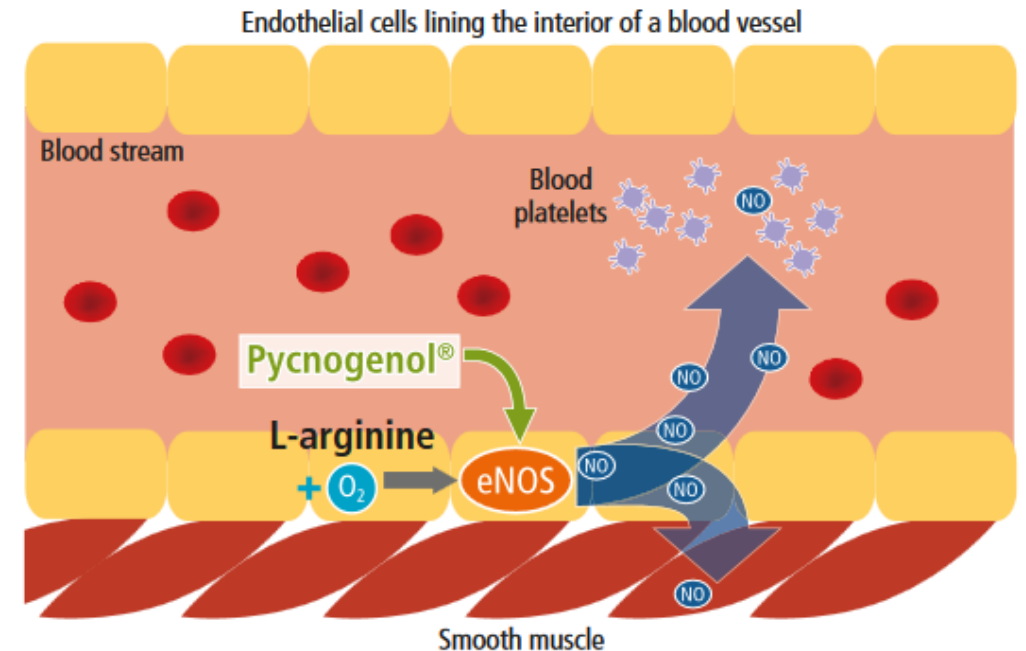


Image: Pycnogenol & L-arginine stimulate eNOS, widening blood vessels and improving blood flow

Prelox®

- A clinically tested dietary supplement for men
- A combination of L-arginine aspartate, taurine and Pycnogenol
- Prelox with its content of Pycnogenol helps to maintain good blood circulation



Available in **UK**

Pycnogenol in Female Health



2017 Study	
Normalization of cardiovascular risk factors in peri-menopausal women with Pycnogenol	

Participants	Exp gp 35 women 35 women with identical cardiovascular risk factors = control group
Methods	Pycnogenol 100mg / day for 8 weeks All instructed to participate in the best management plan of menopause
Measures	Cholesterol, TG, BP, Homocysteine, CRP Menopausal Symptoms Questionnaire
Findings	Pycnogenol® improved the quality of life of perimenopausal women and normalized a series of cardiovascular risk factors

Luzzi R, Belcaro G, Hosoi M, Feragalli B, Cornelli U, Dugall M, Ledda A. Normalization of cardiovascular risk factors in peri-menopausal women with Pycnogenol®. Minerva Ginecol. 2017 Feb;69(1):29-34.	
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CardioMetabolic factors & Perimenopause

A personal improvement plan suggested to all women with the aim to control symptoms linked to menopause:

- At least 8 hours of sleep per night
- Early night rest (not later than 10.30 pm)
- Regular meals; balanced diet
- Reducing salt; controlling excess sugar
- One cup of coffee; one glass of alcohol per day
- At least 20 minutes of exercise/day
- Not more than 1 h of video or TV/day

CardioMetabolic factors & Perimenopause

		Pycnogenol	Controls	P (group differences)
Cholesterol mg/dL	Inclusion			
	8 weeks	202;12*	217;11*	#
	6 months	203;12 ns	216;13 ns	#
Triglycerides mg/dL	Inclusion	193;15	188;22	ns
	8 weeks	172;10*	182;13*	#
	6 months	171;12 ns	185;11 ns	#
Blood pressure mmHg	Inclusion	138;11/93;7	135;8/92;8	ns
	8 weeks	128;8*/87;5*	132;5 ns/90;4 ns	#
	6 months	126;6 ns/88;4 ns	131;8 ns/91;5 ns	#
Homocysteine µmol/L	Inclusion	12.4;2.2	12;2.4	ns
	8 weeks	7.1;2*	11.1;2.3 ns	#
	6 months	6.5;1.1*	11.3;2.4 ns	#
CRP mg/L	Inclusion	3.2;0.8	3.1;1.1	ns
	8 weeks	1.33;0.3*	2.84;0.9*	#
	6 months	1.1;0.4*	3.03;0.5 ns	#
Fasting blood sugar mg/dL	Inclusion	112;9	109;8.3	ns
	8 weeks	102;7.2*	107;9.1 ns	#
	6 months	101;4.6 ns	108;6.3 ns	#

Statistically significant differences ($P < 0.05$) between groups are indicated in the last column. Significant differences ($P < 0.05$) to previous values are indicated by *. Significant differences (< 0.05) between groups are indicated by #.

CardioMetabolic factors & Perimenopause

	Inclusion Pycnogenol (controls)	8 Weeks Pycnogenol (controls)	P
Most common			
1. Night sweat	3.3;0.4 (3.2;0.5)	2.2;0.5 (3.1;1.1)	*
2. Hot flashes	3.4;0.3 (3.4;0.6)	2;0.2 (3.3;1.1)	*
3. Irregular periods	3.3;0.2 (3.1;0.4)	1.1;0.4 (3.1;1.2)	*
4. Less interest in sex	2.4;0.6 (2.5;0.3)	2;0.5 (3.1;0.5)	*
5. Mucosal dryness	3.3;0.3 (3.2;0.7)	2.4;1.7 (3.2;0.2)	*
6. Mood alterations	2.4;0.2 (2.6;0.5)	1.8;0.4 (2.3;0.5)	*
Less important			
7. Fatigue	3.3;0.5 (3.1;0.5)	1.1;0.3 (3.2;0.2)	*
8. Hair loss /problems	3.2;0.4 (2.4;0.5)	2.2;0.4 (2.6;0.4)	*
9. Sleep changes	3.1;0.2 (2.4;0.5)	2.3;0.6 (3.3;0.6)	*
10. Difficult concentration	3.1;0.5 (3.1;0.3)	2.2;0.4 (3.0;0.3)	*
11. Memory lapses	3.2;0.7 (3.3;0.4)	2.1;0.2 (3.3;0.3)	*
12. Dizziness	3.3;0.7 (3;0.4)	2.7;0.2 (3.1;0.2)	*
13. Weight gain	3.2;0.5 (3.3;0.3)	2.5;0.4 (3;0.5)	*
14. Incontinence	1.6;0.3 (1.4;0.3)	1.6;0.2 (1.3;0.3)	ns
15. Bloating	2.2;0.7 (2.1;0.4)	1.1;0.4 (2.2;0.1)	*
16. Allergies / Intolerance	1.8;0.3 (1.4;0.4)	1.7;0.3 (1.3;0.5)	ns
17. Brittle Nails	2.3;0.4 (2.5;0.5)	1;0.3 (2.4;0.3)	*
18. Changes in odor	2.2;0.8 (2.4;0.3)	1;0.3 (2.3;0.4)	*
19. Palpitations	3.6;0.3 (3.5;0.4)	2;0.5 (3.4;0.2)	*

Luzzi R, Belcaro G, Hosoi M, Feragalli B, Cornelli U, Dugall M, Ledda A. Normalization of cardiovascular risk factors in peri-menopausal women with Pycnogenol®. Minerva Ginecol. 2017 Feb;69(1):29-34.

CardioMetabolic factors & Perimenopause

Psychological

20. Depression	2.2;0.4 (2.3;0.3)	1.6;0.3 (2.2;0.8)	*
21. Anxiety	3.3;0.2 (3.3;0.4)	2;0.4 (3.2;0.2)	*
22. Irritability	3.4;0.2 (3.2;0.3)	1.8;0.3 (3;0.3)	*
23. Frequent Panic	3.4;0.2 (3.3;0.4)	2;0.4 (3.4;0.3)	*

Pain-related

24. Breast pain/swelling	3.2;0.3 (3.3;0.3)	1.8;0.4 (3.1;0.4)	*
25. Headaches	2.4;0.4 (2.6;0.3)	2;0.3 (2.6;0.4)	*
26. Joints/Muscles pain	3.3;0.4 (3.3;0.3)	2.8;0.3 (3.4;0.2)	*
27. Burning Tongue	1.6;0.2 (1.3;0.2)	1.5;0.3 (1.4;0.2)	ns
28. Electric shocks	1.4;0.4 (1.9;0.7)	1.3;0.4 (1.6;0.3)	ns

Other symptoms

29. Digestive problems	3.3;0.3 (3.2;0.3)	1;0.2 (3.3;0.4)	*
30. Gum problems	3.3;0.4 (3.1;0.5)	2.2;0.2 (3;0.4)	*
31. Muscle tension/cramps	3.2;0.3 (3.3;0.4)	1;0.3 (3.3;0.4)	*
32. Dry, itchy skin	3.3;0.3 (3;0.4)	1.8;0.2 (3.2;0.3)	*
33. Tingling extremities	3.3;0.4 (3.3;0.3)	2.2;0.3 (3.1;0.3)	*
34. Osteoporosis	2.2;0.3 (2.1;0.4)	2.1;0.3 (2.2;0.3)	ns

P: significant difference between groups (P<0.05)*.

UTIs and Interstitial Cystitis (IC)

- 2021 Open Pilot Registry Study; 64 participants (35-41 years); 60 days
- **Objective:** Evaluate the efficacy of Pycnogenol versus cranberry extract in individuals with recurrent urinary tract infections (UTIs) or interstitial cystitis (IC).
- 2 study groups: 150mg/day Pycnogenol; 400mg/day cranberry extract; control group
- At baseline, all participants exhibited symptoms including mild pain, stranguria, frequent urination, and lower anterior abdominal discomfort.
- Most symptoms associated with recurrent UTIs or IC attributed to persistent bacteriuria or ongoing inflammatory reactions within the lower urinary tract.
- This inflammation may continue due to bacterial remnants such as lipopolysaccharides (LPS), which provoke an inflammatory response by stimulating cytokine release.

UTIs and Interstitial Cystitis (IC)

TABLE 3: Number of self-reported episodes of UTI infection/inflammation in two months (before and during a 2-month follow-up).

Time	Controls (<i>n</i> = 22)		Pycnogenol® (<i>n</i> = 22)		Cranberry (<i>n</i> = 20)	
	2 months before inclusion	2 month-follow-up	2 months before inclusion	2 month-follow-up	2 months before inclusion	2 month-follow-up
Number of UTI episodes in 2 months	3.1 ± 0.2	2.2 ± 0.2	3.13 ± 0.3	1.2 ± 0.2*	3.3 ± 0.4	1.8 ± 0.3
Time	At inclusion	After 2 months	At inclusion	After 2 months	At inclusion	After 2 months
Number of patients with 'infection-free' urine [#]	9/22	8/22	11/22	22/22*	10/20	7/20
Number of symptoms-free patients	0/22	18/22	0/22	20/22*	0/20	16/20

- Based on the results of this study, Pycnogenol® seems to have more important beneficial activity on UTI / IC-triggered inflammation.
- The oxidative stress levels at the end of the study were most significantly lowered with Pycnogenol, compared to control and cranberry groups.
- Pycnogenol components or metabolites could decrease the virulence and diffusion of several bacterial strains

Pharma Nord Formulations

Pycnogenol

A research-driven & sustainable pine bark extract

- 40mg of Pycnogenol per tablet
- Consistent levels of plant compounds from batch to batch
- Over 40 years of research in various areas of health
- Suitable for vegetarians and vegans



Available in **UK**



Available in **ROI**

Pycnogenol Summary

- 1 Pycnogenol is a concentrated source of phenolic compounds
- 2 Demonstrates antioxidant, anti-inflammatory, circulatory and collagen-saving effects
- 3 Many fields of application
- 4 Can support numerous conditions and areas of health including chronic disease

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