Aspects of Men's Health

SUE MCGARRIGLE ND

Men’s Health

- British men are paying the price for neglecting their health: more than 100,000 men a year die prematurely.

- On average, men go to their GP half as often as women.

NHS

Men's Health-the scale of the challenge

PREMATURE DEATH

On average, more than one in five men is still dying between the ages 16 and 65, and more than two in five before the age of 75 – with death rates amongst men in the poorest areas of the country being even worse.

HEART DISEASE AND CANCER

Men are still more likely to die of circulatory disease and cancer.

https://www.menshealthforum.org.uk/

- 75% of premature deaths from coronary heart disease are male.
- Men have a 37% higher risk of dying from cancer and a 67% higher chance of dying from cancers that affect both men and women (i.e. excluding those cancers that affect either women only or men only).

Men's Health

https://www.menshealthforum.org.uk/

OBESITY

67% of men are overweight or obese.

DIABETES

Middle-aged men are twice as likely to have diabetes as women – and twice as likely not to know they have diabetes.

LIFESTYLE Men are more likely than women to:

- smoke, smoke more cigarettes per day and smoke hand-rolled tobacco
- eat too much salt
- eat too much red and processed meat
- eat too little fruit and too few vegetables
- drink alcohol and drink at hazardous levels. Men are twice as likely to have liver disease.

Men's Health

Male targeting – especially higher risk groups and at appropriate stages of the life course – with particular focus on areas and transitions where groups have higher risk:

- Unemployed men
- Men experiencing relationship breakdown
- Men in the criminal justice system
- BAME (black, Asian and minority ethnic) men – e.g. prostate cancer, mental health & diabetes
- GBT+ men – e.g. sexual health, incl. chem-sex, and smoking
- Male carers
- Homeless men
- Isolated older men
- Young dads
- Excluded boys.

Men's Health

Not all men are equally at risk.

As examples:

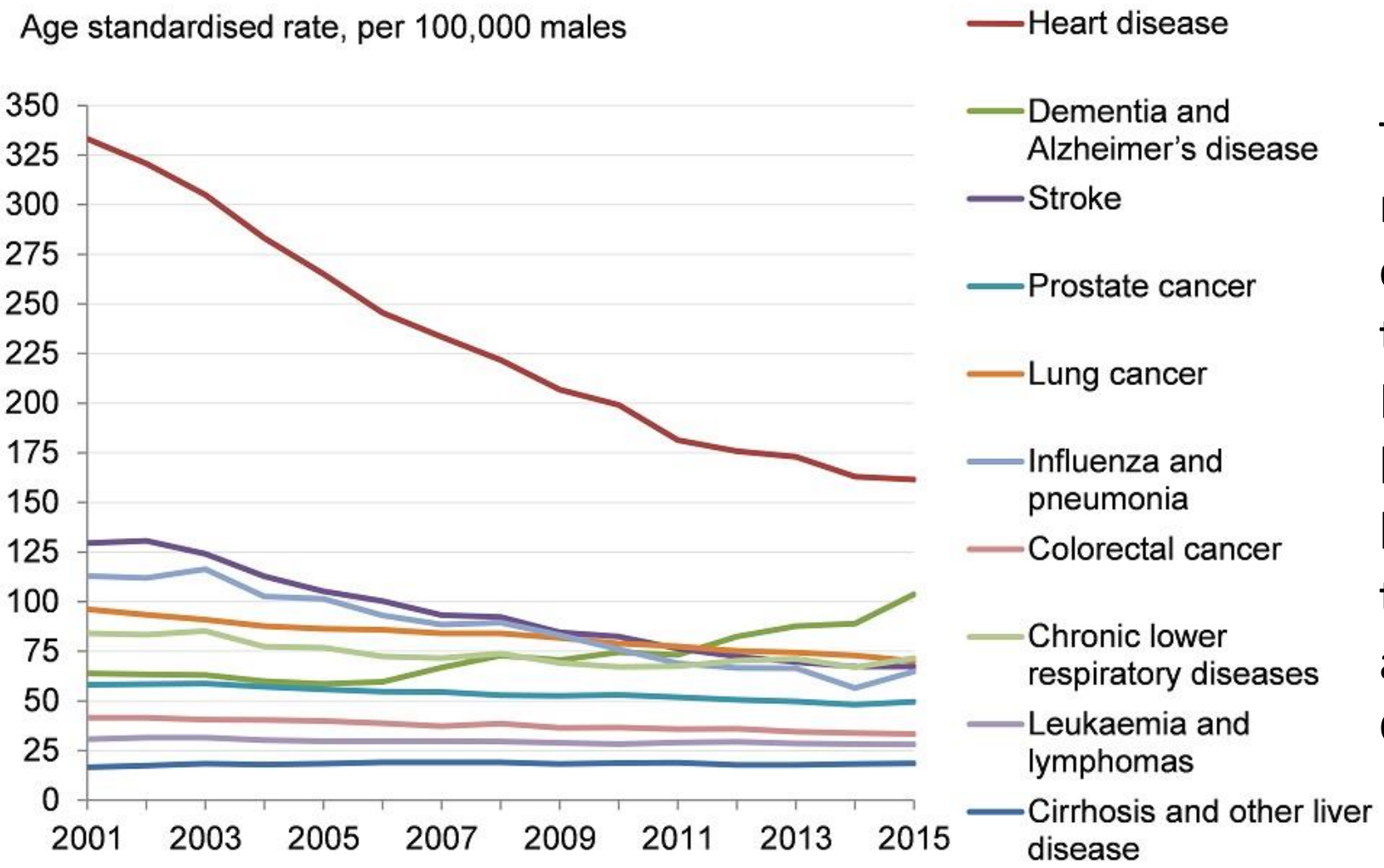
- Unemployed men are significantly more likely to suffer from heart attacks and depression and are significantly more likely to smoke and report greater mental health and relationship worries.
- Black men are three times more likely to develop prostate cancer than white men of the same age.
- A recent study showed that by age 80, twice as many British South Asian, Black African and African Caribbean men had developed diabetes compared with Europeans of the same age.
- Gay and bisexual men report higher levels of depression, are more likely to attempt suicide, are more likely to smoke and are also much more likely to have used recreational drugs and have engaged in binge drinking compared to men in the wider population.
- 42% of carers are male. Seven out of ten male carers said that that they missed out on having a social life, leaving them isolated and alone.
- Around 88% of rough sleepers are men.

The average age of death for rough sleepers is 47.

The top causes of death in men

- Heart and circulation conditions, including ischaemic heart disease, stroke and arterial disease. Around 4 million males are living with heart and circulatory diseases in the UK. In the UK, one in eight men die from coronary heart disease. People with heart failure are 2-3 times more likely to have a stroke. People with diabetes are twice as likely to have a stroke. (BHF UK)
- Cancer, including lung and trachea cancer, prostate cancer, stomach, oesophageal and pancreatic cancer. Cancers are broken down into site-specific causes in the leading cause analysis. However, cancers accounted for 30.0% of deaths in males. Prostate cancer was among the 10 leading causes
- Respiratory disorders, including COPD and asthma
- Disorders of the nervous system, including Alzheimer's disease, other forms of dementia and Parkinson's disease
- Digestive disorders, including liver disease
- Kidney disorders, including renal failure
- The latest UK suicide figures show that on average just under 6,000 people take their own lives every year. Three-quarters of them are men. Suicide is the leading cause of death for men under 50.

Men's Health



Trends in age-standardised mortality rates from leading causes of death, males, 2001 to 2015, England

For males, death rates from heart disease and stroke have halved since 2001, whereas the death rate from dementia and Alzheimer's has increased. Gov.UK

Men’s Health by age

Ischaemic heart diseases and dementia and Alzheimers disease were the leading causes of death for males in 2022

Leading causes of death England and Wales, 2022-ONS

Males

Age Group	Leading Cause	% of male deaths
All ages	Ischaemic heart diseases	13.3
1 to 4 years	Congenital malformations, deformations and chromosomal abnormalities	14.4
5 to 19 years	Intentional self-harm and event of undetermined intent	15.8
20 to 34 years	Intentional self-harm and event of undetermined intent	25.7
35 to 49 years	Accidental poisoning	12.8
50 to 64 years	Ischaemic heart diseases	18.3
65 to 79 years	Ischaemic heart diseases	15.4
80 years and over	Dementia and Alzheimers disease	13.5

The top six risks to men's health

- Smoking, a major risk factor in lung cancer, COPD and heart disease
- High blood pressure, increasing the risk of heart disease and stroke
- High cholesterol, another big risk factor for heart disease and stroke
- Obesity, risking heart disease, stroke and type 2 diabetes and its complications
- Not enough fruit and veg, not putting 5-a-day on a plate at mealtimes increase the risk of heart disease, stroke and some cancers
- Lack of exercise, not achieving the recommended 150 minutes of exercise a week increases the risks of heart disease, stroke and bowel cancer

Five signs not to be ignored

- Testicular lump
- Moles
- Depression
- Trouble urinating
- Impotence

Testicular Cancer

Testicular cancer is the most common cancer in men aged 20 to 35. Nearly 2,400 men are diagnosed with testicular cancer each year in the UK. Cancer UK

Begins as a problem with spermatogenic cells within the seminiferous tubules

Most testicular lumps are not cancer, but it is essential to have any abnormalities checked

Men’s health

Men have any number of health conditions with which they may be afflicted but use of the term ‘men’s health’ is often used to describe issues relating specifically to the prostate.

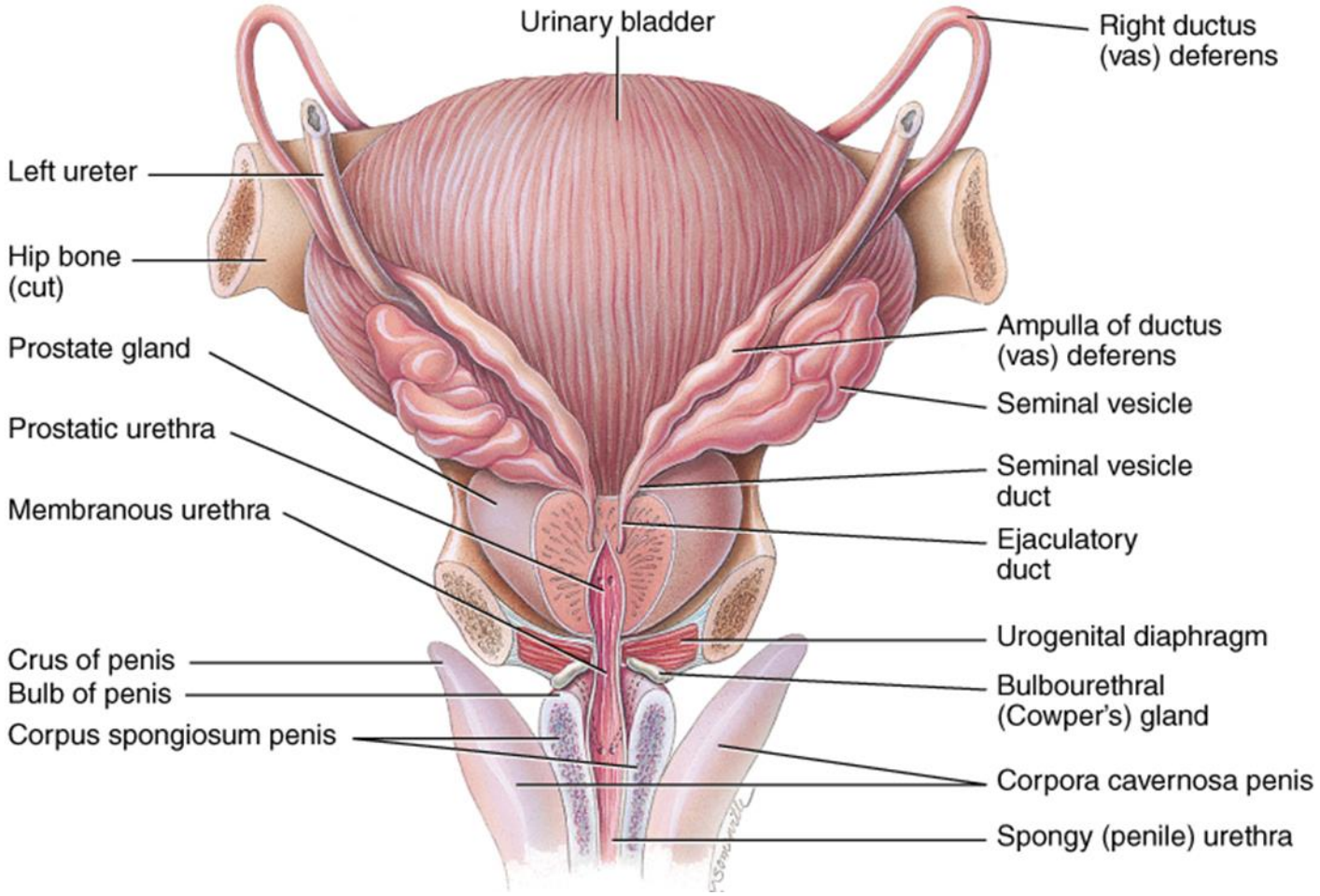
Prostate dysfunction most commonly manifests as benign prostatic hyperplasia (BPH) that affects around a third of men over the age of 50.

Prostate cancer accounts for one quarter of the cancers diagnosed in males.

Figures for prostatitis, another prostate disease, are less clear although typically it affects men between the ages of 30 and 50.

Prostate gland

- Single organ the size of chestnut found inferior to bladder
- Secretes milky, pH 6.5 fluid that increases sperm motility and viability
- Citric acid for ATP production & enzymes for seminal liquefaction of coagulated semen
- Many duct openings
- Prostatitis, benign prostatic hyperplasia (BPH), and prostate cancer are the most frequent pathologies of this gland.



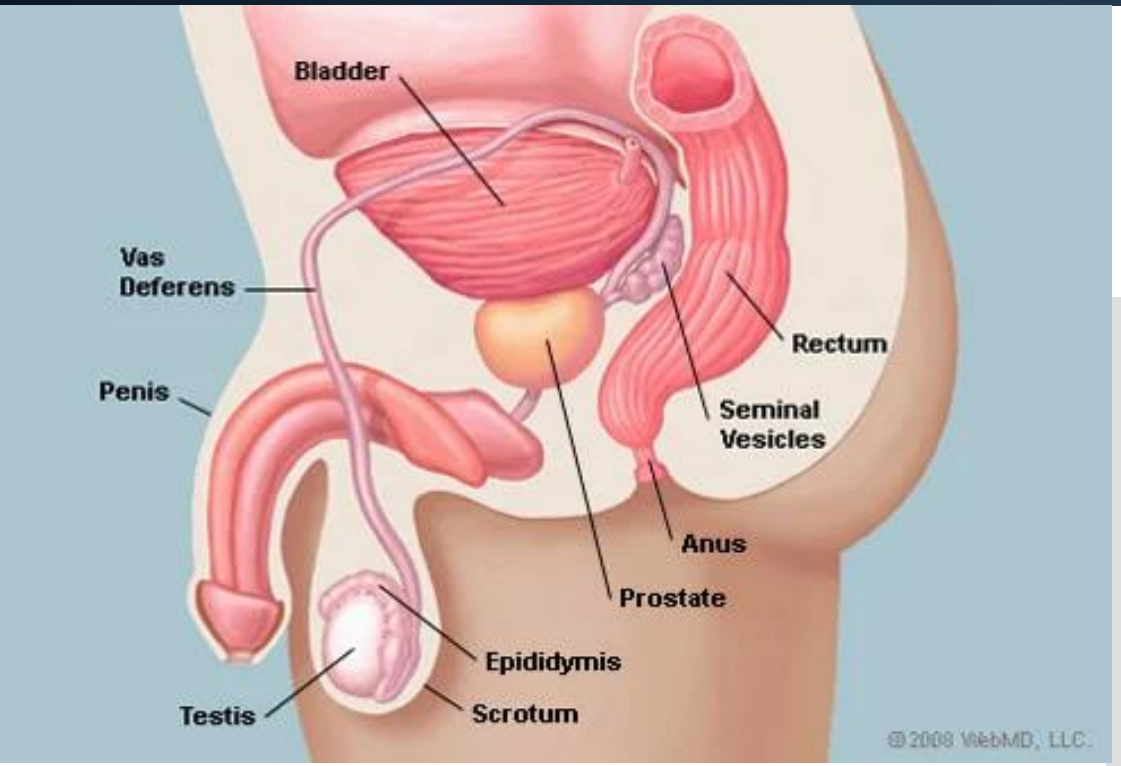
BPH

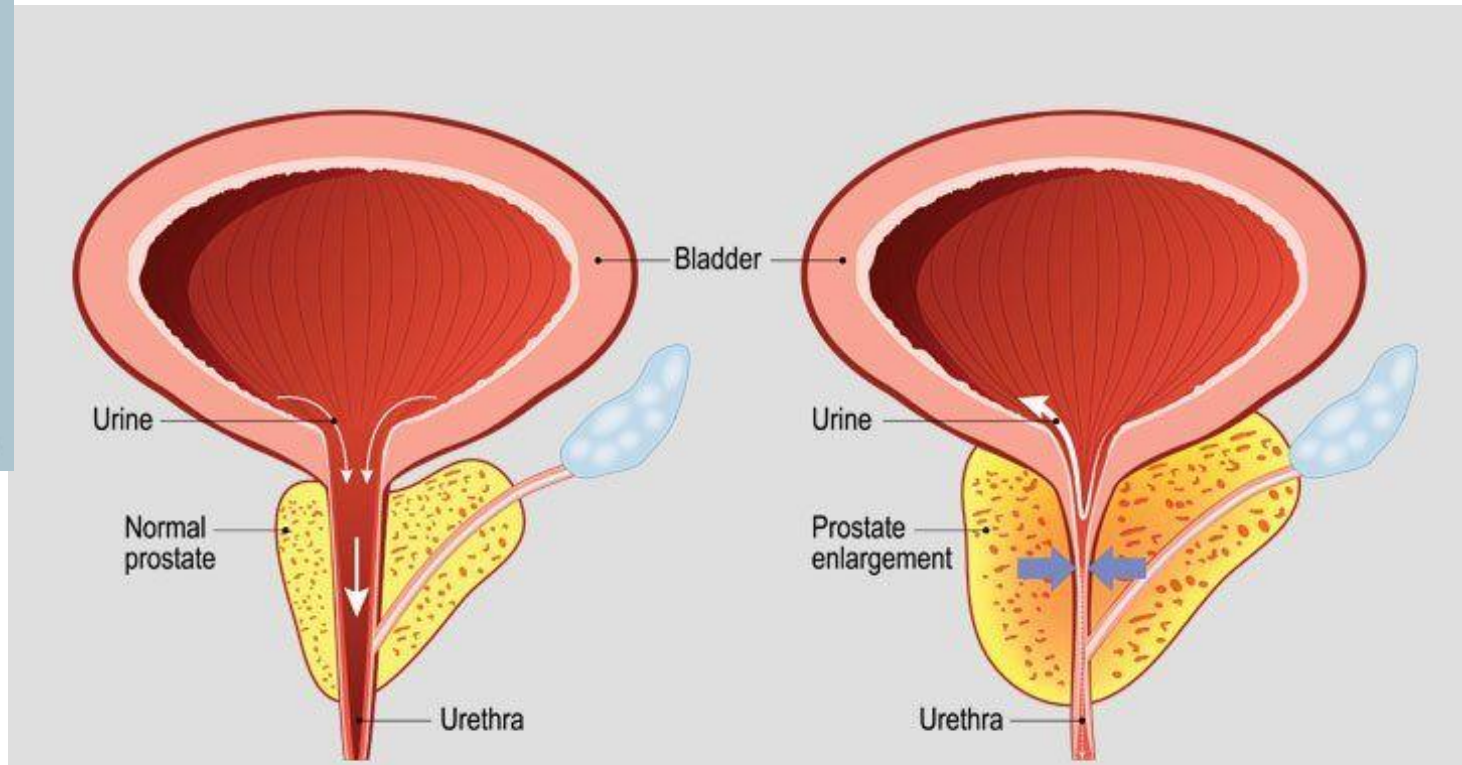
- The prostate gland tends to get bigger with age and this can push on the urethra, interfering with the flow of urine. This condition is called benign prostatic hyperplasia. It’s sometimes also referred to as benign prostatic enlargement (BPE). It isn't cancerous. BPH is a common problem in men as they get older. Around half of all men have an enlarged prostate by the age of 50 and about 9 out of 10 men have an enlarged prostate by the age of 90.

Symptoms include:

- having difficulty passing urine
- having a weak flow of urine that sometimes starts and stops
- dribbling of urine before or after urinating
- a feeling of incomplete emptied your bladder after passing urine
- a frequent or urgent need to pass urine
- needing to get up several times in the night to pass urine

Benign prostatic hyperplasia





BPH

- In BPH there appear to be two considerations in the aetiology. First there is a static or structural component in which the urethra is pressurised because of physical enlargement of the prostate due to overgrowth of the prostatic epithelium.
- In this regard androgens, in particular dihydrotestosterone (DHT), play a permissive role allowing prostate cell proliferation to occur. Normally this proliferation is balanced against apoptosis, but with age the process becomes imbalanced and prostate growth results.
- Drug therapy for BPH often targets the inhibition of 5-alpha-reductase (5-AR), the enzyme responsible for converting testosterone into DHT, thereby limiting cell proliferation.
- Secondly there is a dynamic element, which appears to be linked to sympathetic nervous system activation and noradrenaline concentrations, which influence prostate contractility. This aspect is therefore strongly associated with the catecholamine pathway and the stress response.

Nutrition Practitioner Vol 13,issue 1,
Dietary Factors in Prostate Health: Research Update: (23--27) Chamberlain

BPH

There are several naturally occurring ingredients that are believed to block DHT.

These include;

- Saw Palmetto
- Stinging Nettle
- Pumpkin Seed Oil
- Lycopene
- Green Tea
- Fenugreek

Nettle

One of the most recognized health benefits of using stinging nettles is activity against Benign Prostatic Hyperplasia (BPH), as well as urinary tract infections.

U. dioica can be used effectively for the management of BPH. These effects are related to two biochemical markers, β-sitosterol and scopoletin (Nahata and Dixit, 2002)

It has been observed that some sterols and hydroxyl fatty acids, even if they exist at low concentrations in Nettle can inhibit aromatase, which is a key enzyme in steroid hormone-metabolism mediation and the conversion of androgens into oestrogens. The increased expression of aromatase disrupts the balance of oestrogen/ androgen in the prostate. Therefore, the oestrogen-dominant status in men after middle age has been implicated in the induction and progression of BPH (Shibata et al. 2000).

Stinging Nettle extract can act as a 5a-reductase inhibitor, preventing the conversion of testosterone to Dihydrotestosterone (DHT). By inhibiting prostatic conversion of testosterone to DHT, prostate size can be reduced.

Nettle lignans may block the binding of sex-hormone binding globulin to testosterone or to the testosterone receptor.

Nettle

Numerous studies conducted mostly in Germany have shown the root to have a beneficial effect on enlarged prostate glands. There have been several clinical trials that have demonstrated the efficacy of nettle root in treating benign prostatic hyperplasia (BPH) a common condition found in older men. Nettle root inhibits the proliferation of prostate cells through its lignan activity as well as its affinity to bind with sex hormone binding globulin (SHBG).

Schottner M et al (1997). Lignans from the roots of Urtica dioica and their metabolites bind to human sex hormone binding globulin (SHBG). Planta Med. 1997; 63(6):529–532.

Nettle

In a study of 246 BPH patients, a special extract of stinging nettle safely and effectively reduced the adverse effects of prostate enlargement when compared to placebo.

In another 6-month study of 558 people, stinging nettle roots significantly improved multiple measures of prostate health,

Relief of lower urinary tract

Maximum urinary flow rate

Residual urine volume

Prostate size

International Prostate Symptom Score

Randomized Controlled Trial J Herb Pharmacother. 2005;5(4):1-11.
Urtica dioica for treatment of benign prostatic hyperplasia: a prospective, randomized, double-blind, placebo-controlled, crossover study
Mohammad Reza Safarinejad 1
Affiliations expand
PMID: 16635963

Clinical Trial Urologe A. 2004 Mar;43(3):302-6. doi: 10.1007/s00120-004-0532-7.
[Stinging nettle root extract (Bazoton-uno) in long term treatment of benign prostatic syndrome (BPS). Results of a randomized, double-blind, placebo controlled multicenter study after 12 months]
T Schneider 1, H Rübben
PMID: 15045190 DOI: 10.1007/s00120-004-0532-7

Nettle-prostate health

The aqueous extract of U. dioica roots demonstrated a dose dependent inhibition of the binding globulin to its receptor and directly inhibits cell proliferation of HeLa cells and block binding of epidermal growth factor to its receptor.

The aqueous extract of U. dioica leaves also caused significant inhibition on ADA activities in prostate tissues.(Durak et al., 2004).

Nettle

Blood pressure regulation

Antioxidant

Antimicrobial-urinary tract

Control of blood flow

Reduction of pain

Modulates the inflammatory response

Aquasol Nettle Root

Orthodox treatment

- Pathology to determine bacterial infection, urine
- Treatment options for BPH consist of:
  - doing nothing,
  - drug treatment with alpha-blockers and/or 5-alpha reductase inhibitors, or
  - surgical treatment.
- Antibiotics:
  - Depending on the severity of the infection, antibiotics may be given by mouth or by intravenous injection.
- NSAID's:
  - Nonsteroidal anti-inflammatory drugs are often used for analgesic, anti-inflammatory and anti-pyretic effects.

Natural medicines comprehensive database. Natural Medicines in the Clinical Management of benign prostatic hyperplasia. Accessed: 25 January 2010

http://www.naturaldatabase.com/(S(c4rmokbt3rje44ecve0dxx45))/ce/CECourse.aspx?cs=&pm=5&s=nd&pc=07-23&searchid=18790707#keywordanchor

BPH

- Metabolic syndrome appears strongly linked with increased risk of BPH. Metabolic syndrome is a disorder of energy utilisation and storage, diagnosed by a co-occurrence of three out of five of the following medical conditions: abdominal (central) obesity, elevated blood pressure, elevated fasting plasma glucose, high serum triglycerides, and low high-density cholesterol (HDL) levels.
- Waist to hip ratio, evidence of abdominal fat accumulation, test results indicating dyslipidaemia and insulin imbalance should be considered not only for their risk relating to development of type II diabetes and cardiovascular issues, but that they may also be indicative of risk for prostate dysfunction.
- Accordingly, strategies designed to support those at risk of developing metabolic syndrome could potentially be supportive of prostate health.

BPH

- SHBG increases with age and can act like an additional androgen receptor in the prostate cell.
- It is suggested that when oestrogen binds to SHBG in the cell membrane, insulin-like growth factor 1 (IGF-1) is synthesised causing proliferation of prostatic epithelial cells.

Santach R (2003). Prostate Problems and Solutions. Mediherb Modern Phytotherapist

Flaxseed lignans

- Flaxseed lignans are currently being researched for their role in men's health issues, such as Benign Prostatic Hyperplasia (BPH) or enlargement of the prostate gland, and abnormal cell proliferation. Lignans can interfere with indigenous levels of testosterone, and thus have a positive effect on prostate health.

Demark-Wahnefried W, Robertson CN, Walther PJ, Polascik TJ, Paulson DF, Vollmer RT.
Pilot study to explore effects of low-fat, flaxseed supplemented diet on proliferation of benign prostatic epithelium and prostate-specific antigen.
Urology2004 63:900-904.

Zinc and Vitamin D

- Zinc has a long history of association with prostate health. It is required for androgen metabolism and therefore plays a regulatory role in DHT synthesis.
- Specifically, zinc inhibits 5-AR and reduces prolactin secretion – a hormone that increases the uptake of testosterone by prostate tissue. In more recent epidemiological research intake of zinc has been inversely associated with risk of BPH, with total intakes of >33.3mg per day inferring the lowest risk and <11.5mg per day the greatest risk.
- Epidemiological studies also indicate that vitamin D status is inversely associated with incidence of both BPH and prostate cancer. Vitamin D receptor agonists, drugs that mimic the action of vitamin D by stimulating vitamin D receptors, have been shown to reduce inflammation via influence on the nuclear factor kappa-B pathway. Additionally, both the size and contractility of the prostate are reduced by vitamin D receptor agonists.

Prostate health - zinc

- Zinc is an important element in the makeup of prostatic fluid and plays an important role in the immunology of the infectious and neoplastic pathologies of the prostate.
- Benign prostate cells accumulate zinc, and this excess zinc inhibits citrate oxidation and metabolism within the citric acid cycle, effectively resulting in citrate production. Prostate cancer cells reverse this phenotype and adopt a zinc wasting, citrate oxidising phenotype, thereby representing a major shift in energy metabolism. malignant cells preferentially decrease the amount of stored zinc to avoid cell death.
- Thirty patients with prostatic pathologies and ten healthy controls were studied.
- Low zinc concentrations were obtained in people with prostatitis and prostate cancer, in contrast to the control group, which led to consider the possibility of recommending zinc supplements as a coadjuvant therapy in patients with prostatitis and, to use zinc measurements as another diagnostic tool, for cases in which it is necessary to differentiate benign prostatic hyperplasia from prostate cancer.

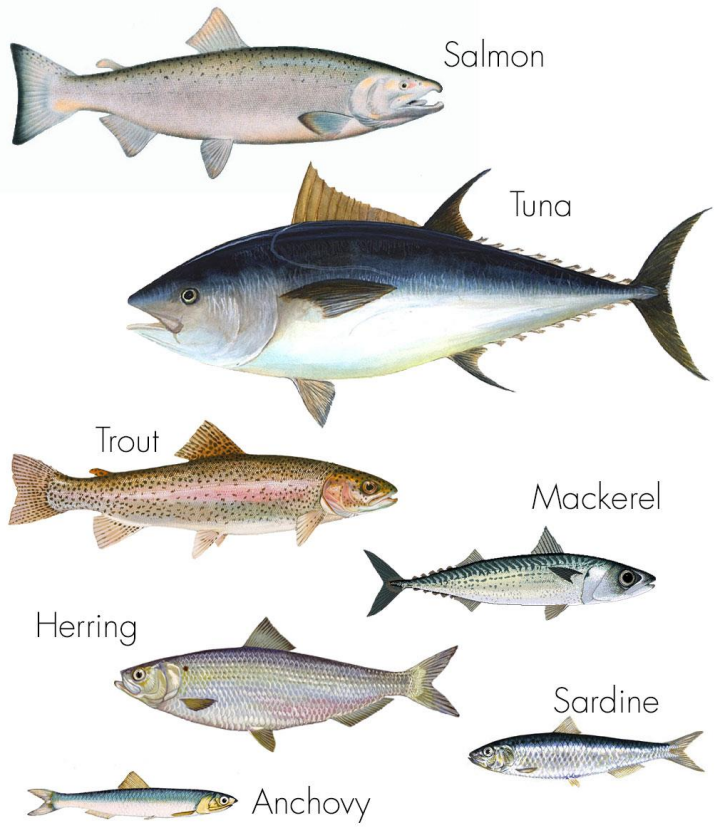
Gomez Y et al (2007). Zinc levels in prostatic fluid of patients with prostate pathologies. Invest Clin.;48(3):287-94

Refs

- Kristal AR, Arnold KB, Schenk JM, Neuhouser ML, Goodman P, Penson DF, et al. Dietary patterns, supplement use, and the risk of symptomatic benign prostatic hyperplasia: results from the prostate cancer prevention trial. Am J Epidemiol. 2008 Apr 15;167(8):925-34.
- Leake A, Chisholm GD, Habib FK. The effect of zinc on the 5 alpha-reduction of testosterone by the hyperplastic human prostate gland. J Steroid Biochem. 1984 Feb;20(2):651-5.
- Judd AM, Macleod RM, Login IS. Zinc acutely, selectively and reversibly inhibits pituitary prolactin secretion. Brain Res. 1984 Feb 27;294(1):190-2.
- Kristal AR, Arnold KB, Neuhouser ML, Goodman P, Platz EA, Albanes D, et al. Diet, supplement use, and prostate cancer risk: results from the prostate cancer prevention trial. Am J Epidemiol. 2010 Sep 1;172(5):566-77.
- Adorini L, Penna G, Fibbi B, Maggi M. Vitamin D receptor agonists target static, dynamic, and inflammatory components of benign prostatic hyperplasia. Ann N Y Acad Sci. 2010 Apr;1193:146-52.
- REVIEW article Front. Oncol., 19 June 2017 Sec. Cancer Molecular Targets and Therapeutics Volume 7 - 2017 | https://doi.org/10.3389/fonc.2017.00131Cancer Metabolism: Molecular Targeting and Implications for Therapy The Metabolic Phenotype of Prostate Cancer Eric Eidelman et al

BPH and Omega 3 fatty acids

- EPA and DHA have been strongly associated with BPH (prostate enlargement specifically) and BPH surgery. The suggestion is that lipid peroxidation is a driver for this association and has the net effect of increasing DHT via 5-AR activity. In addition, there are the wider implications of lipid peroxidation on cellular proliferation and cytotoxicity. With both theoretical mechanisms it is not the omega-3 fatty acids per se that cause the problem, but rather their high levels of unsaturation that might be problematic in men with oxidative stress. Notwithstanding the potential for lipid peroxidation, recent studies suggest a possible protective role for EPA and DHA against prostate cancer development, whereas alpha linolenic acid may be potentially deleterious.



Suzuki S, Platz EA, Kawachi I, Willett WC, Giovannucci E. Intakes of energy and macronutrients and the risk of benign prostatic hyperplasia. Am J Clin Nutr. 2002 Apr;75(4):689-97.

Astorg P. Dietary N-6 and N-3 polyunsaturated fatty acids and prostate cancer risk: a review of epidemiological and experimental evidence. Cancer Causes Control. 2004 May;15(4):367-86.

Ellinger S, Ellinger J, Muller SC, Stehle P. [Tomatoes and lycopene in prevention and therapy--is there an evidence for prostate diseases?]. Aktuelle Urol. 2009 Jan;40(1):37-43.

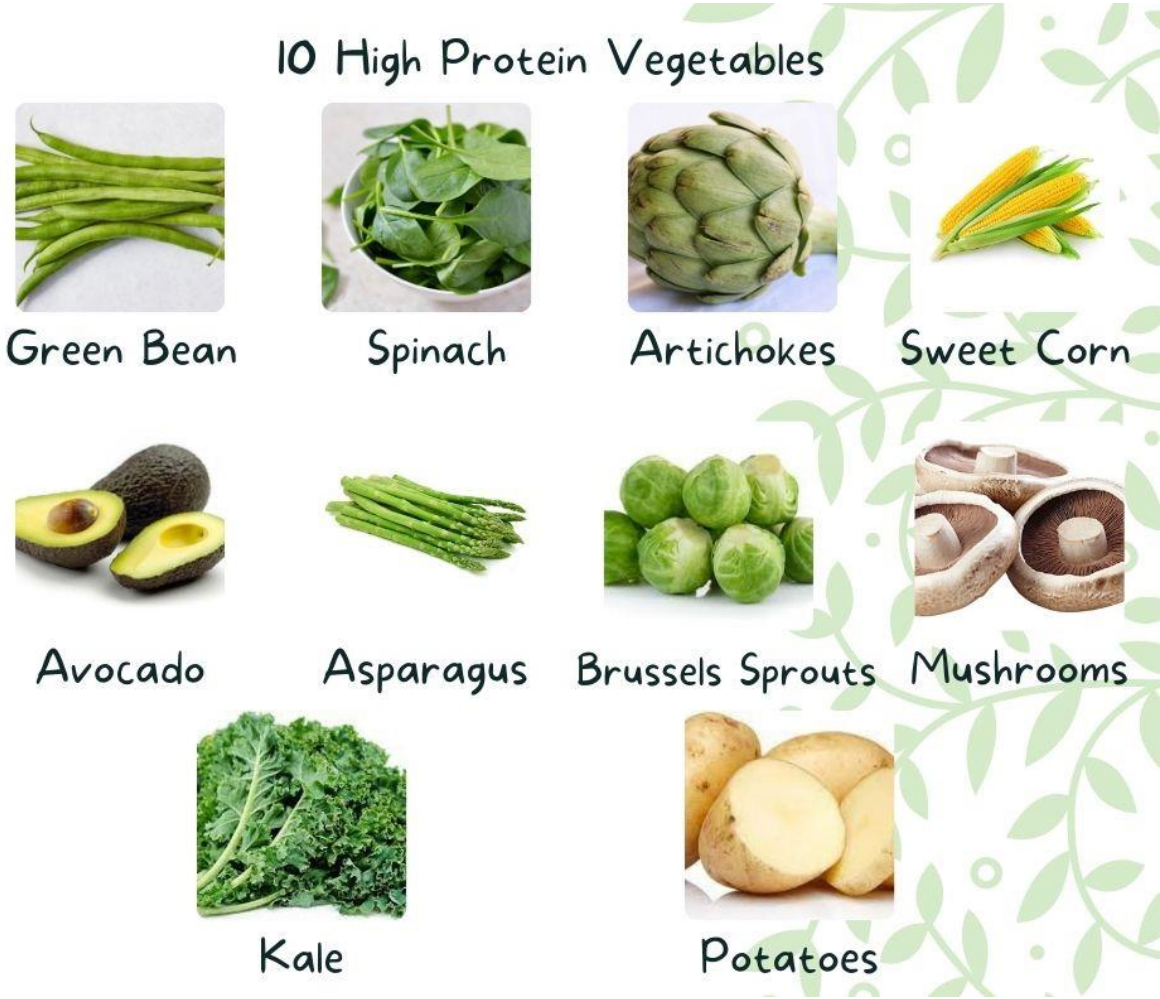
Lycopene

- A carotenoid pigment of tomatoes and other red or pink fruits and vegetables.
- Studies have found clear evidence for lycopene in prostate health, with an inverse association with prostate cancer risk and BPH.
- May inhibit 5-alpha reductase and interleukin-6 signalling, and its antioxidant properties may help prevent cell proliferation and remodelling in the prostate.
- Scientists enrolled 40 cancer-free men with BPH and serum prostate-specific antigen (PSA) levels of greater than 4.0 mcg/L. The men were randomised to receive 15 mg lycopene or placebo daily for six months.), the prostate did not enlarge in the lycopene group**.** Symptoms of the disease, as assessed via the International Prostate Symptom Score questionnaire, were improved in both groups with a significantly greater effect in men taking lycopene supplements. In conclusion, lycopene inhibited progression of BPH.

Schwarz S, et al (2008). *Lycopene Inhibits Disease Progression in Patients with Benign Prostate Hyperplasia.* American Society for Nutrition;138 (1): 49.

Protein

- An 8-year study of 3523 men with BPH cited that total protein intake is positively associated with BPH, with the association being slightly stronger for *animal* protein intake than for vegetable protein intake.
- Interestingly some evidence suggests that a high-protein diet (total calories: 44% protein, 35% carbohydrate, 21% fat) can inhibit 5-alpha-reductase, while a low-protein diet (10% protein, 70% carbohydrate, and 20% fat) may stimulate the enzyme.



Pizzorno J, Murray M (2007). Textbook of Natural Medicine. e-dition. Missouri:Elsevier

Prostate Cancer

- In the UK, around 55,000 men are diagnosed with prostate cancer each year and the majority are over 70. The risk of getting prostate cancer is higher if a close relative, such as father or brother, has had it. Cancer UK
- There is no national screening programme for prostate cancer in the UK. A PSA test – a blood test that measures levels of a protein called prostate specific antigen (PSA) is available. This may be worth considering if you're over 50 years old.
- There is uncertainty over whether treatment outweighs the potential harm it may cause. For example, this may lead to unnecessary investigation and treatments for slow growing cancers that wouldn't have caused any harm. A raised level of PSA can also be caused by other conditions, such as an enlarged prostate or a urinary infection. In fact, two out of three men who have raised PSA levels don't have prostate cancer.
- Prostate cancer can press on your urethra and block the flow of urine, producing symptoms similar to those of BPH. These symptoms aren't always caused by prostate cancer.
- Treatment for prostate cancer depends on several factors, including age, general health and the stage and grade of cancer. For example, monitoring such as watchful waiting or active surveillance may be offered with no treatment. Monitoring may be offered because prostate cancer is often slow-growing and may not need other treatment.
- Prostate cancer may also be treated with surgery, radiotherapy or hormone therapy

PSA test

- Blood test for prostate-specific antigen (PSA)
  - enzyme of epithelial cells
  - amount increases with enlargement (indication of infection, benign enlargement or cancer)
  - The normal value for PSA is less than 4 ng/ml.
  - Levels between 4.0 ng/mL and 10.0 ng/mL may indicate BPH
  - PSA levels greater than 4 should be referred to a urologist for further evaluation.
  - An elevation greater than 10 is highly indicative of prostate cancer.

PSA progression

- This study has demonstrated a significant positive short-term effect on the rate of PSA progression in men using pomegranate, green tea, broccoli and turmeric.

A double-blind, placebo-controlled randomised trial evaluating the effect of a polyphenol-rich whole food supplement on PSA progression in men with prostate cancer—the UK NCRN Pomi-T study R Thomas, M Williams, H Sharma, A Chaudry and P Bellamy *Prostate Cancer and Prostatic Disease* (2014), 1–7

Prostatitis

Prostatitis is a poorly understood condition where the prostate gland becomes inflamed (red and swollen). Inflammation often occurs as a response to infection, but in most cases of prostatitis no evidence of infection can be found.

Acute or chronic prostatitis is an infection of prostate causing swelling, tenderness & blockage of urine flow.

There are four main types of prostatitis:

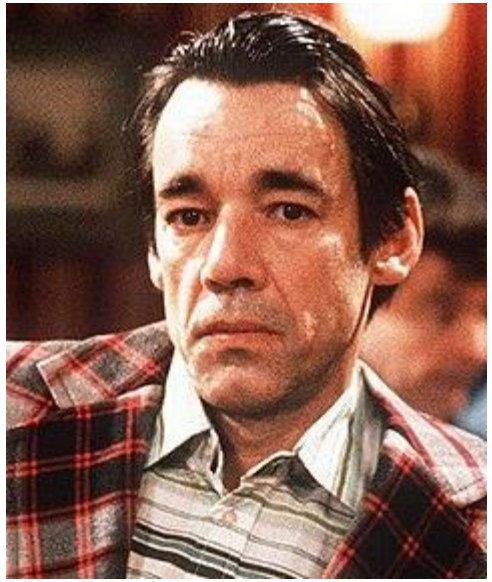
- chronic pelvic pain syndrome (CPPS)
- acute bacterial prostatitis
- chronic bacterial prostatitis
- asymptomatic inflammatory prostatitis.

Prostatitis

- Chronic pelvic pain syndrome (CPPS) is the most common type of prostatitis – around 19 out of every 20 men (90 to 95 per cent) with prostatitis have it. It can also be called chronic non-bacterial prostatitis, chronic abacterial prostatitis or prostate pain syndrome.
- Men with CPPS usually have symptoms for three months or longer. Even after treatment, they may still have prostatitis for a long time. It might come and go, causing occasional episodes of severe pain, sometimes known as flare-ups.
- Nobody knows for certain what causes CPPS. Unlike other types of prostatitis, it isn’t usually caused by a bacterial infection. There could be several causes, which makes it difficult to diagnose and treat.

Prostatitis-potential triggers

- Urine getting into the prostate
- Previous infections in or around the prostate
- An infection that doesn’t show up in tests
- Problems with nerves, so that they send pain signals to the brain even when there’s nothing physically wrong
- Stress, anxiety or depression
- Problems with the pelvic floor muscles (the muscles that support bladder and bowel and help to control urination).
- Some research shows a link between stress, anxiety and depression and CPPS.



There’s some evidence that CPPS may be linked to other conditions such as chronic fatigue syndrome and severe tiredness, and irritable bowel syndrome (IBS).

Some men with CPPS have symptoms of these conditions too. There’s also some evidence that in a small number of men, CPPS may be caused by a sexually transmitted infection.

Prostatitis

Symptoms of prostatitis include:

- Pelvic pain
- Testicular pain
- Pain when urinating (this is less common and more likely with a urinary tract infection)
- Pain when ejaculating semen
- Pain in the perineum (the area between the anus and back of the scrotum), which is often worse when sitting, particularly on hard chairs and bicycle saddles
- Prostatitis is thought to affect up to 3 in 20 men (15%) at some point in their lives. Although it can affect men of any age, it is more common in men between 30-50 years of age.

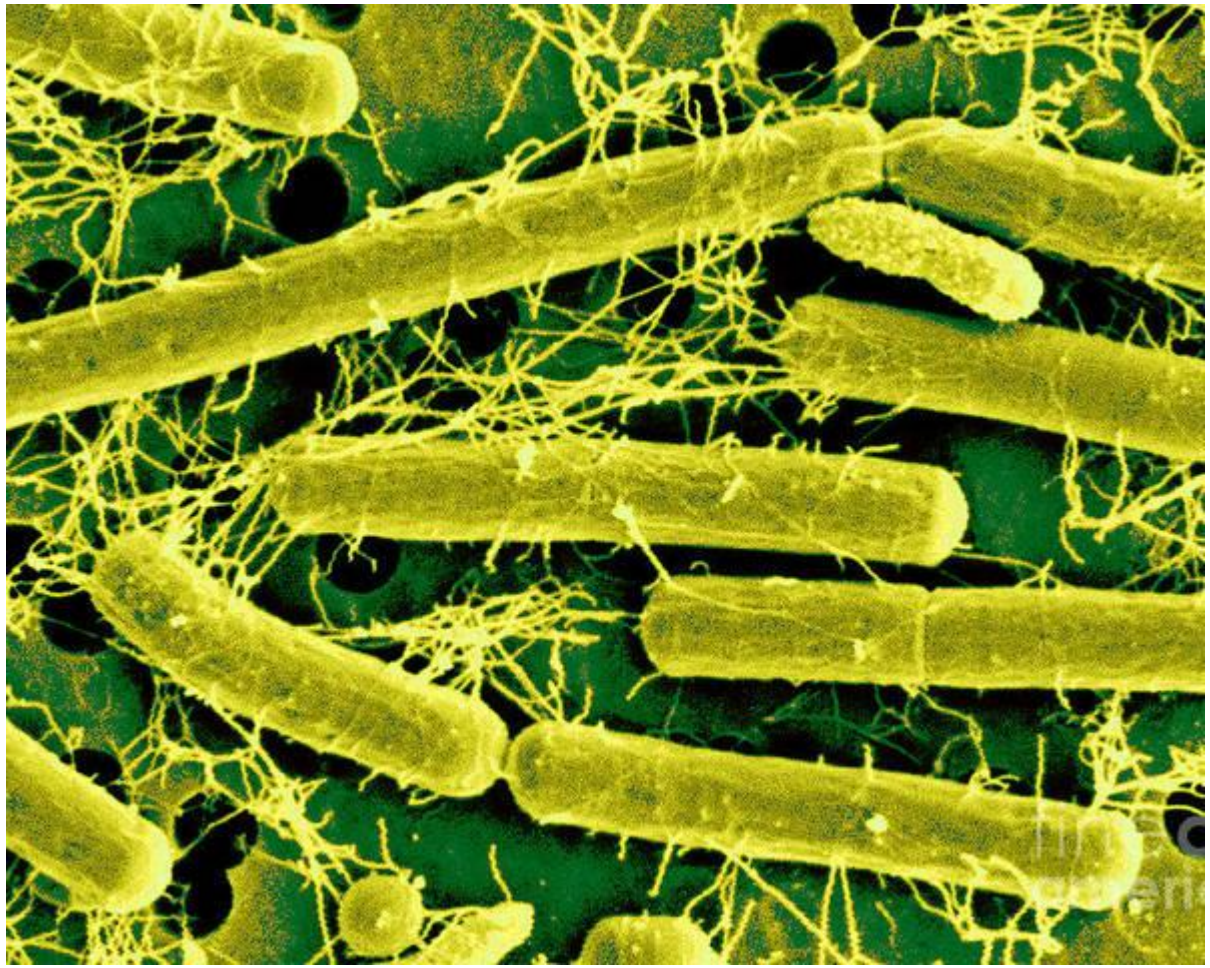
Prostatitis - zinc

- OBJECTIVE: To investigate the seminal parameters, zinc concentration and antibacterial activity in patients with non- inflammatory chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS).
- METHODS: Seminal parameters, zinc concentration and antibacterial activity of seminal plasma were detected in 60 CP/CPPS patients and 20 normal men.
- RESULTS: Statistically significant differences were found in the duration of semen liquefaction, sperm vitality, sperm motility, zinc concentration and antibacterial activity of the seminal plasma between the CP/CPPS and the control males ($P < 0.01$).
- Zinc concentration was significantly correlated with the duration of sperm motility ($r = 0.272$, $P = 0.015$) and antibacterial activity of the seminal plasma ($r = 0.449$, $P < 0.01$) in the CP/CPPS patients.
- CONCLUSION: CP/CPPS has a significant negative impact on semen liquefaction, sperm motility and vitality, zinc concentration and antibacterial activity of seminal plasma. The antibacterial activity of seminal plasma is positively correlated with zinc concentration and sperm motility.

Zhao H et al (2008*). Changes of seminal parameters, zinc concentration and antibacterial activity in patients with non-inflammatory chronic prostatitis/chronic pelvic pain syndrome*. Zhonghua Nan Ke Xue; 14(6):530-2.

Prostatitis

- A review paper written by Mark McLure MD, FACS, of Landmark Urology and Complementary Medicine and published in the May 2002 issue of the "World Journal of Urology" notes that Lactobacillus acidophilus can help reduce the risk of prostatitis



Prostatitis - Quercetin

- RESULTS: Both the quercetin and placebo groups were similar in age, symptom duration, and initial symptom score. Patients taking placebo had a mean improvement in NIH symptom score from 20.2 to 18.8 (not significant), while those taking the bioflavonoid had a mean improvement from 21.0 to 13.1 (P = 0.003). Twenty percent of patients taking placebo and 67% of patients taking the bioflavonoid had an improvement of symptoms of at least 25%. In the 17 patients in the open-label study, 82% had at least a 25% improvement in symptom score.
- CONCLUSIONS: Therapy with the bioflavonoid quercetin is well tolerated and provides significant symptomatic improvement in most men with chronic pelvic pain syndrome.

Shoskes DA, Zeitlin SI, Shahed A, Rajfer J (1999*). Quercetin in men with category III chronic prostatitis: a preliminary prospective, double-blind, placebo-controlled trial.* Urology 54(6):960-3.

Dietary considerations

- A protein rich diet, which includes complex carbohydrates and more than 5 portions of fruit, and vegetables would appear a logical starting point in attempting to address specific metabolic syndrome and prostate health.
- Balancing ratios of essential fatty acids may require the client to eat more sources of omega-3 and fewer omega-6 fatty acids to redress balance and improve their status of essential fatty acids.
- Lycopene and other carotenoids are specifically associated with prostate health and can be increased in the diet through the consumption of brightly coloured vegetables, and tomatoes.

Herbal therapy

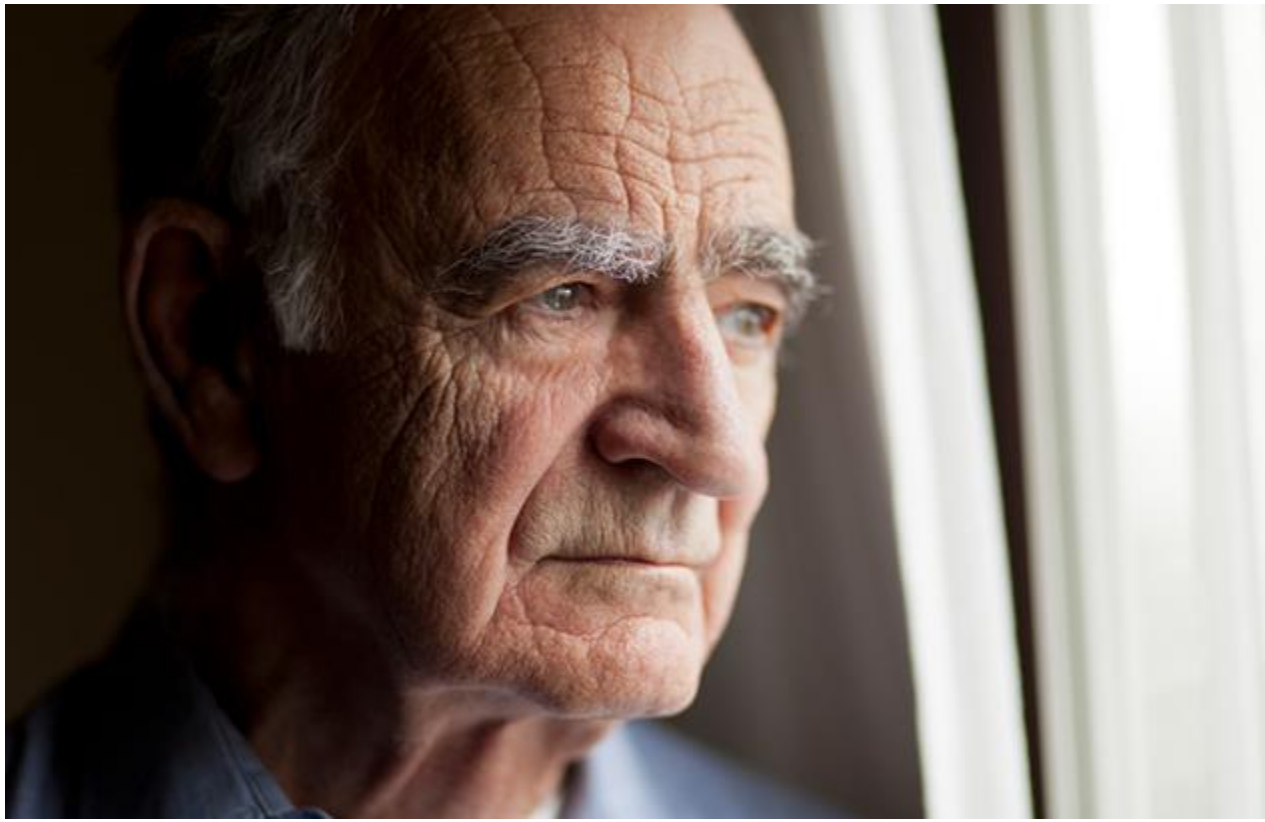
- *Serenoa repens* (Saw Palmetto)
  - mild inhibition of 5-alpha-reductase, anti-androgenic activity and an inhibition of androgen binding
  - anti-inflammatory and spasmolytic.
- *Urtica dioica* (Stinging Nettles)
  - long tradition of use in Germany for the treatment of inflammations of the urinary tract, for the prevention of urinary lithiasis and for the treatment of BPH. Root is rich in lignans. Helps relieve stress in tissues and lowers acidity
- *Pygeum africanum*
  - includes beta-sitosterol.
  - reduces prostate enlargement and blocks DHT from binding to prostate cells.

Older male symptoms

- Some men develop depression, loss of sex drive, impotence and other physical and emotional problems when they reach their late 40s or early 50s.

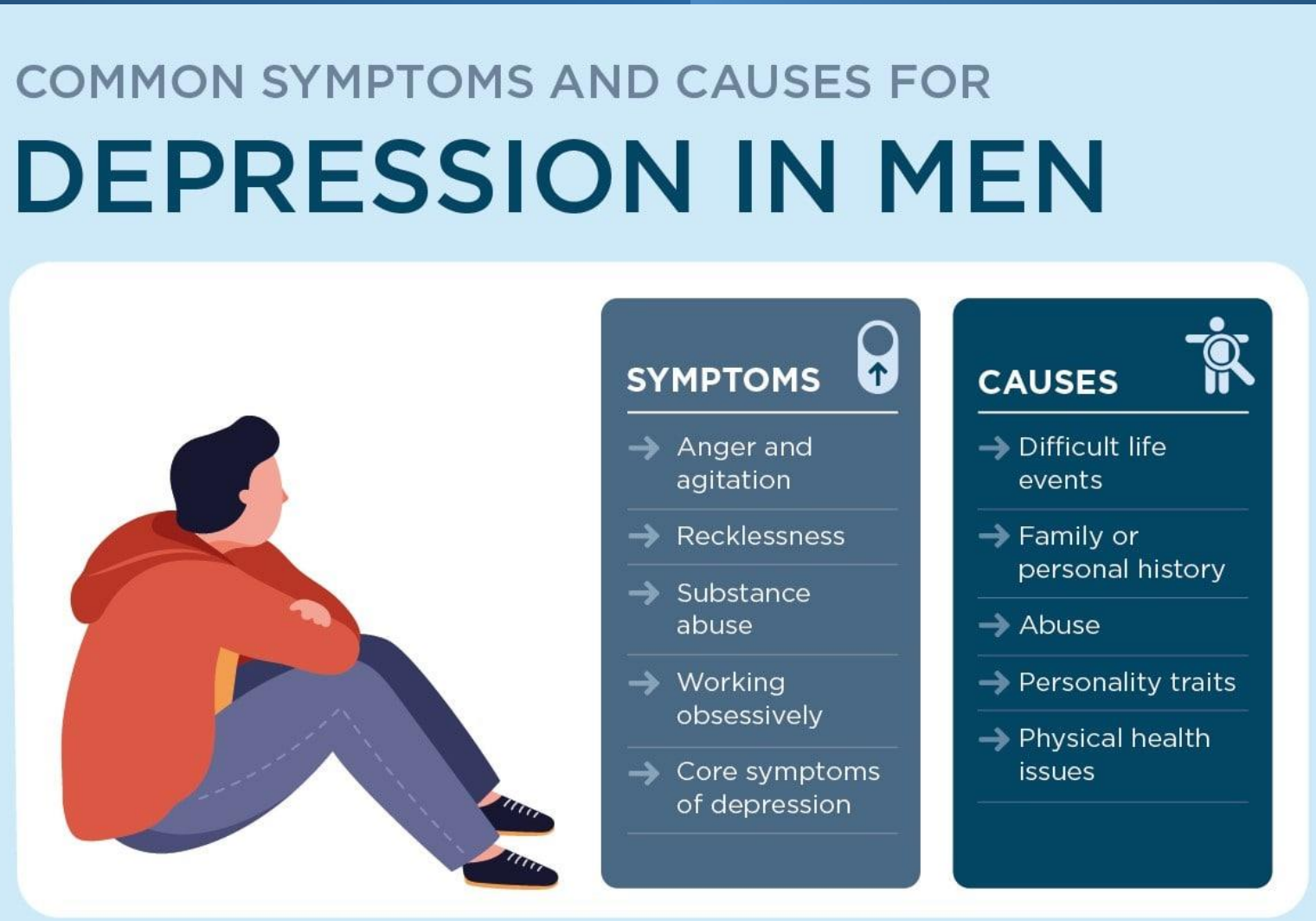
Other health problems which occur for men in this age group are:

- hot flushes
- mood swings
- loss of muscle mass and fat redistribution
- tiredness
- dry and thin skin
- increased sweating
- poor concentration and irritability
- loss of enthusiasm



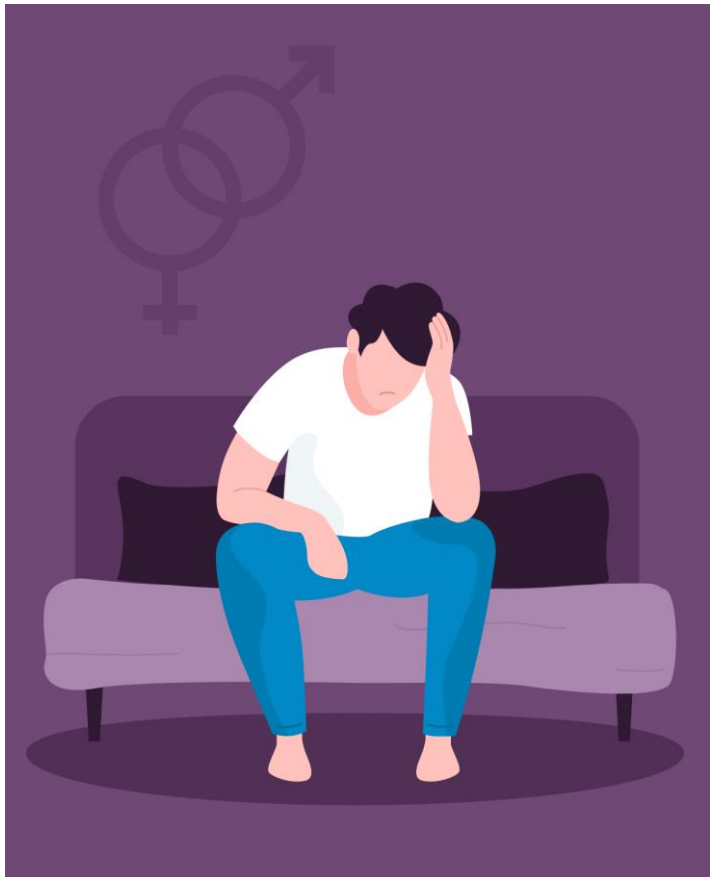
Depression

- Effects on work, social and family life. Treatment usually involves a combination of self-help, talking therapies and drugs.
- Depression is more common in women, but men are far more likely to commit suicide. This may be because men are more reluctant to seek help.
- Financial stress: job insecurity, redundancy and debt



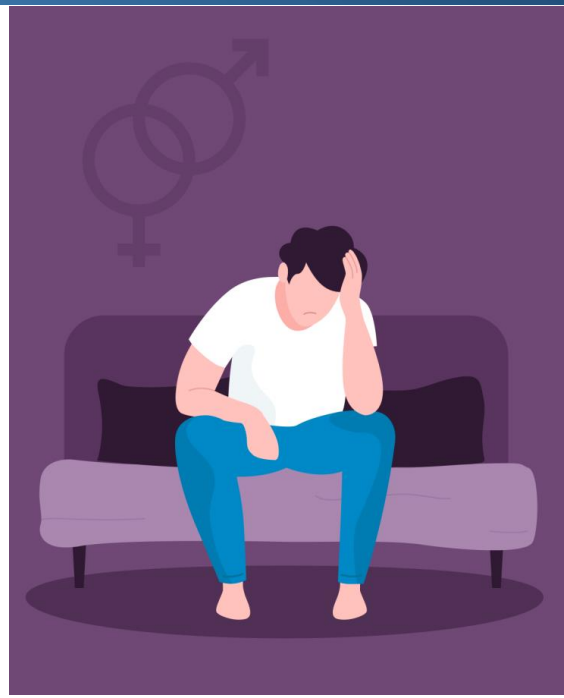
Erectile Dysfunction (ED)

- Consistent inability of adult male to hold an erection long enough for sexual intercourse
- Most men have problems getting or keeping an erection (impotence) at some point. Generally, lifestyle changes, such as losing weight and exercise, can correct the problem. Some men may need medication such as sildenafil(also known as Viagra which causes vasodilation of penile arteries).
- A GP is likely to assess general health because impotence, also known as erectile dysfunction, can be a sign of more serious conditions, such as heart disease, diabetes or high blood pressure.



ED-causes

- Vascular disturbances/cardiovascular disease
- Testosterone deficiency
- High blood pressure and high cholesterol levels
- Diabetes
- Surgery affecting the blood vessels or nerves that supply the penis
- Trauma to the penis or scrotum
- Certain medicines, including some antidepressants/tranquillisers and some medicines for high blood pressure such as beta blockers
- Psychological problems such as anxiety and depression
- Tiredness, illness or stress
- Smoking or drinking too much alcohol



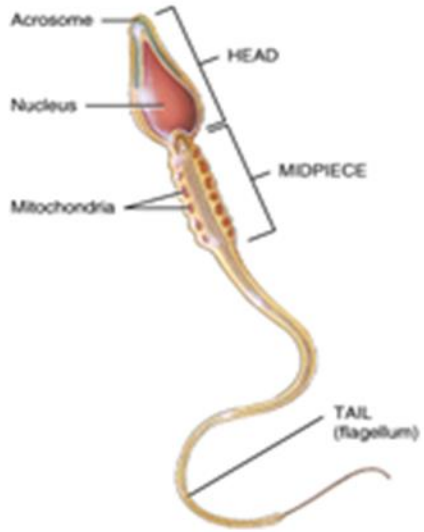
DHA and the acrosome

A study shows that docosahexaenoic acid is essential in fusing the building blocks of the acrosome together. The acrosome is critical in fertilisation because it houses, organizes, and concentrates a variety of enzymes that sperm use to penetrate an egg.

M. Roqueta-Rivera, T. L. Abbott, M. Sivaguru, R. A. Hess, M. T. Nakamura. Deficiency in the Omega-3 Fatty Acid Pathway Results in Failure of Acrosome Biogenesis in Mice. Biology of Reproduction, 2011; 85 (4): 721 DOI: 10.1095/biolreprod.110.089524

Sperm Morphology

- Adapted for reaching & penetrating a secondary oocyte
- Head contains DNA & acrosome (hyaluronidase and proteinase enzymes)
- Midpiece contains mitochondria to form ATP
- Tail is flagellum used for locomotion

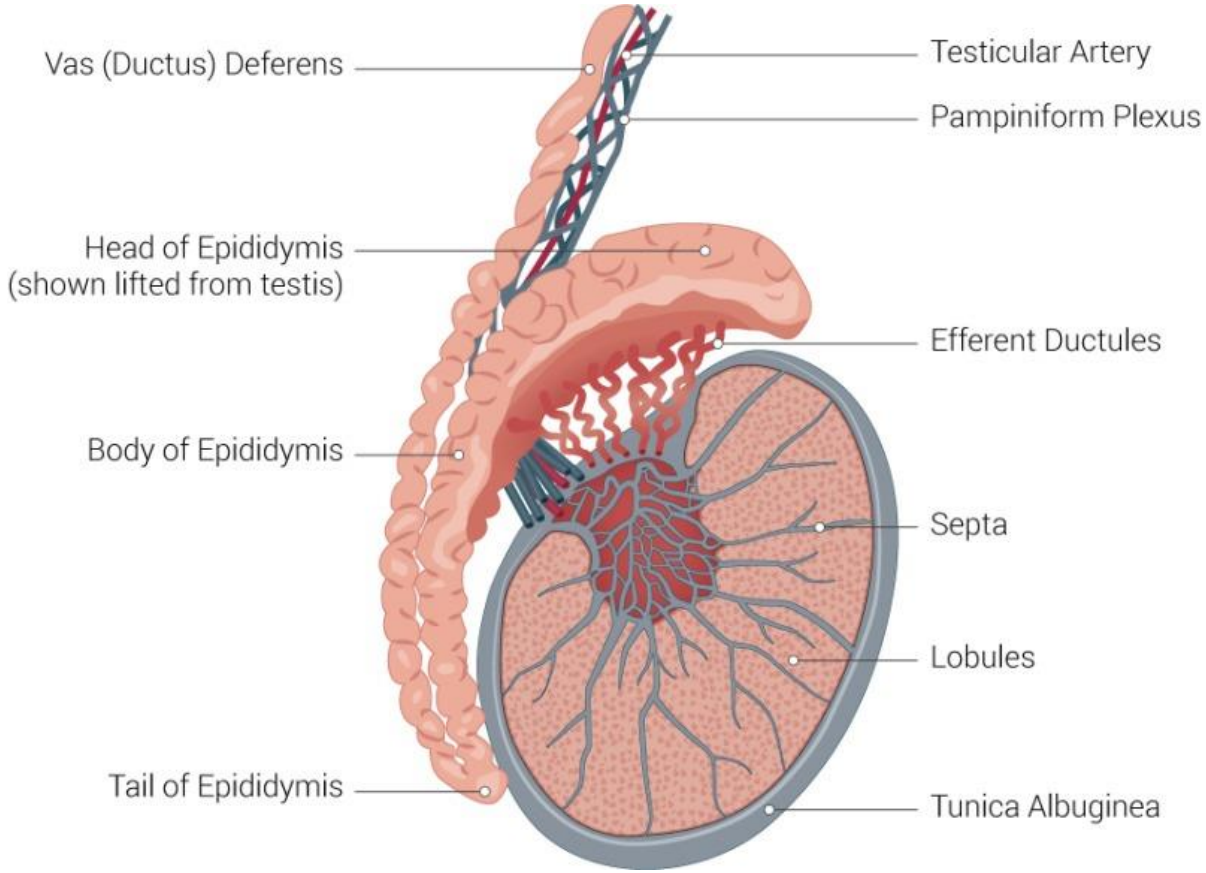


28-20

Surgical Sterilisation

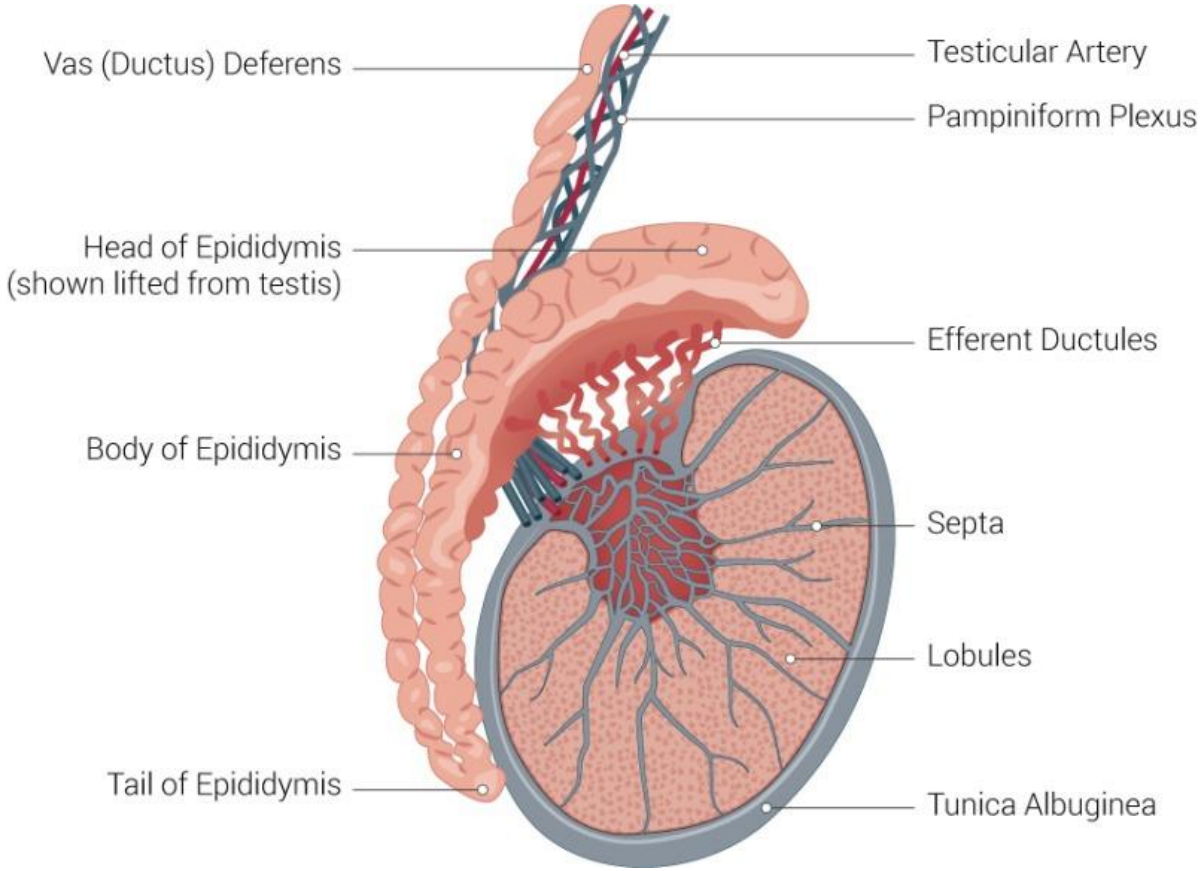
Male (vasectomy)

- removal of a portion of the vas deferens
- incision in posterior scrotal sac
- outpatient & local anaesthesia
- sperm can no longer reach the exterior
- degenerate and removed by phagocytosis
- sexual desire not effected since testosterone levels unchanged
- 100% effective
- 40% reversible



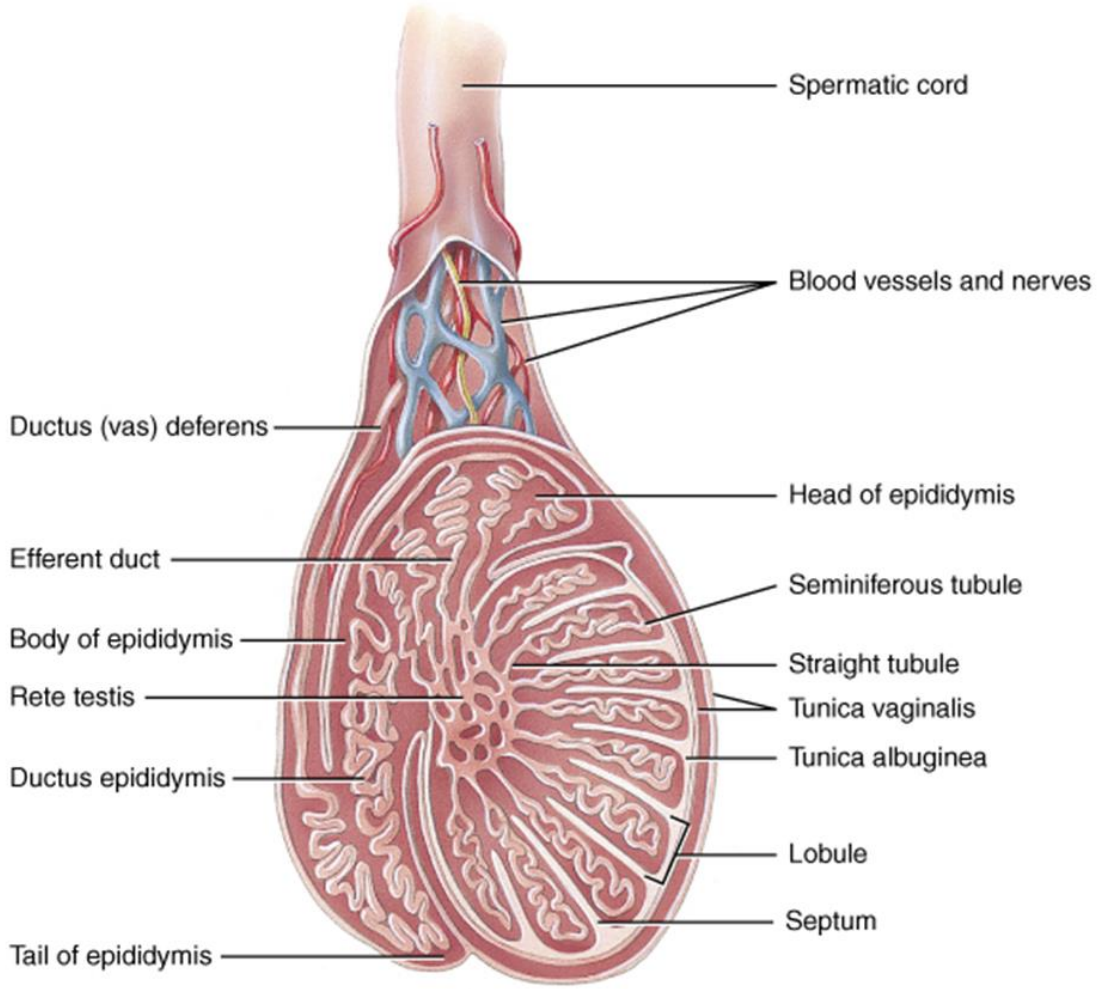
Epididymis

- Comma-shaped organ, 1.5in long along posterior border of each testis
- Head, body and tail region
- Multiple efferent ducts become a single ductus epididymis in the head region
  - 20-foot tube if uncoiled
- Tail region continues as ductus deferens



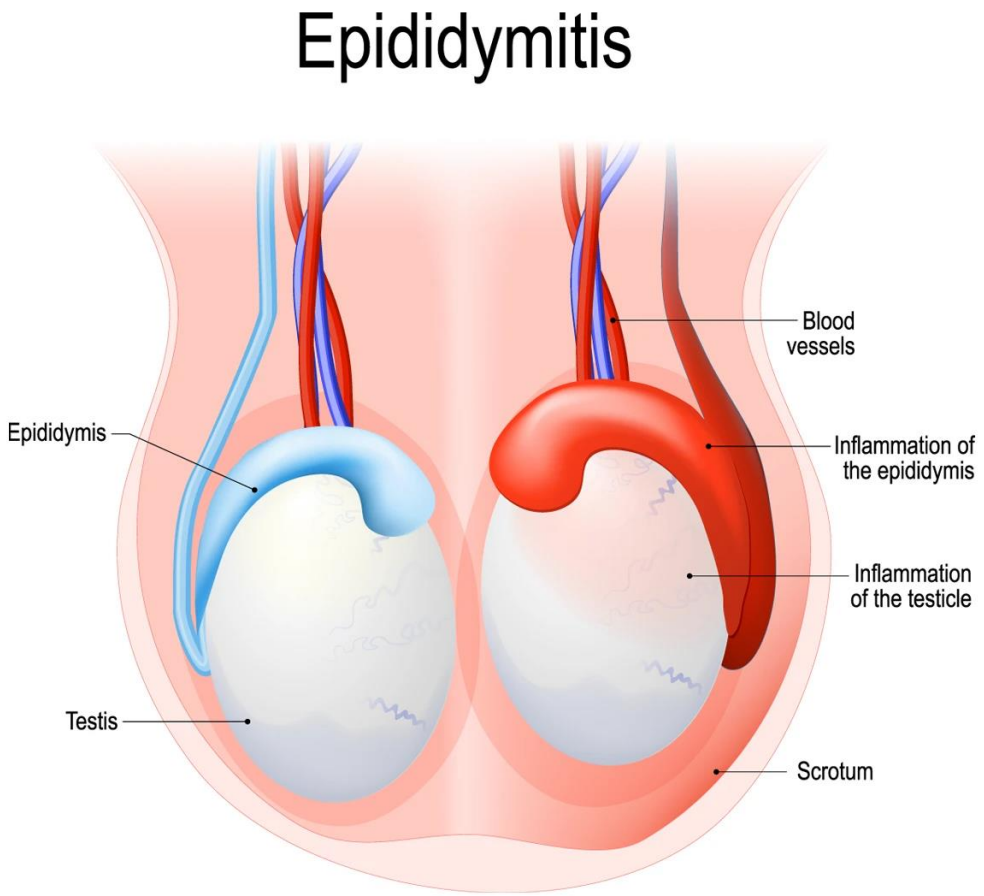
Histology of the Epididymis

- Ductus epididymis
  - lined with pseudostratified ciliated columnar epithelium
  - layer of smooth muscle
- Site of sperm maturation
  - motility increases over 2-week period
- Storage for 1-2 months
- Propels sperm onward



Epididymitis

- Acute epididymo-orchitis is a clinical syndrome consisting of pain, swelling and inflammation of the epididymis, with or without inflammation of the testes.
- The most common route of infection is local extension and is mainly due to infections spreading from the urethra (sexually transmitted infections (STIs)) or from the bladder.
- Orchitis (infection limited to the testis) is much less common.
- Chronic epididymitis refers to epididymal pain and inflammation (usually without scrotal swelling) that lasts for more than six months.



Aetiology of epididymo-orchitis

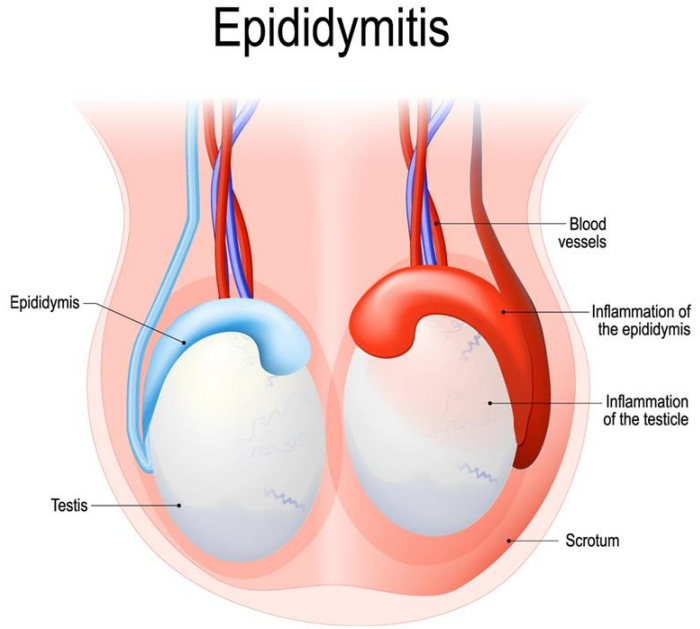
- In men under 35 years old, infection is most often due to a sexually transmitted pathogen – e.g, *Chlamydia trachomatis* and *Neisseria gonorrhoeae*.
- In men over 35 years old, infection is most often due to a non-sexually transmitted Gram-negative enteric organism causing urinary tract infections - eg, *Escherichia coli*, *Pseudomonas* spp. Specific risk factors include recent instrumentation or catheterisation.
- However, there is an overlap between these groups and a thorough sexual history is imperative for all age groups.
- Mumps should be considered as an aetiology since the epidemic in 2005.

Management of epididymo-orchitis; British Association for Sexual Health and HIV (2010 updated June 2011)

Sexually Transmitted Infections in Primary Care; Royal College of General Practitioners and British Association for Sexual Health and HIV (Apr 2013)

Epididymitis

- Instrumentation and indwelling catheters are common risk factors for acute epididymitis. Urethritis or prostatitis may also co-exist.
- Structural or functional abnormalities of the urinary tract are common in the group infected with Gram-negative enteric organisms. Adults usually have bladder outlet obstruction or urethral stricture; children may have an ectopic ureter, posterior urethral valves or vesicoureteral reflux.
- Anal intercourse is also a risk factor for infection with enteric pathogens.
- Reflux of infected urine from the prostatic urethra to the epididymis via the ejaculatory ducts and vas deferens may be induced by Valsalva manoeuvre or strenuous exertion. Epididymitis is common in men performing strenuous exertion when there is no opportunity to void, resulting in a full bladder.



Male infertility

- Gonadotropin-releasing hormone (GnRH) from the hypothalamus stimulates the release of follicle-stimulating hormone (FSH) and luteinizing hormone (LH) from the pituitary.
- FSH stimulates the Sertoli cells to facilitate sperm production, while LH stimulates testosterone release from the Leydig cells. Feedback inhibition is from testosterone and inhibin.
- The hypothalamus also produces thyrotropin-releasing hormone (TRH) and vasoactive intestinal peptide (VIP), both of which stimulate prolactin release from the anterior pituitary, and dopamine, which inhibits prolactin release.
- Men with elevated prolactin levels (CKD and hypothyroid, meds) present with gynaecomastia, diminished libido, erectile dysfunction, and occasionally galactorrhoea (milky secretion from breast).

Rubenstein J, Brannigan RE (2008) Infertility, Male, Medscape, http://emedicine.medscape.com/article/436829-treatment

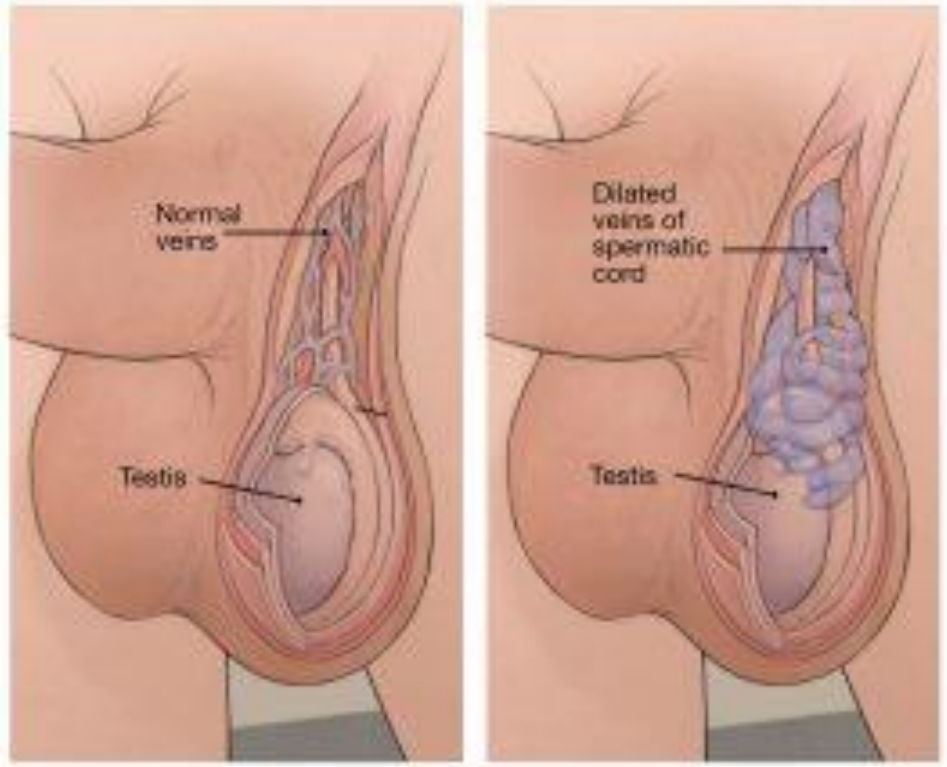
Although the male body needs oestrogen to function properly, high oestrogen levels can cause health problems such as gynaecomastia, erectile dysfunction, or infertility

Male infertility-causes

- Low Sperm Count Or Quality
- Azoospermia [no sperm in the ejaculate]
- Problems With The Tubes Carrying Sperm
- Problems Getting An Erection
- Problems Ejaculating.
- Having Had Inflamed Testes (Orchitis)
- A Past Bacterial Infection That Caused Scarring And Blocked Tubes Within The Epididymis As It Joins The Vas
- Having Received Medical Treatment Such As Drug Treatment, Radiotherapy Or Surgery – For Example To Correct A Hernia, Undescended Testes Or Twisted Testicles
- Genetic Problems
- Diabetes
- Lifestyle Factors Such As Being Overweight Or Having A Job That Involves Contact With Chemicals Or Radiation.
- Excessive Use Of Stimulants
- Oxidation
- Stress/High Prolactin/Reduced GnRH Stimulation/Reduction Of FSH

Male infertility-varicocele

- Varicocele is a dilation of the veins of the pampiniform plexus of the scrotum. Can increase temperature.
- Although varicoceles are present in 15% of the male population, a varicocele is considered the most common correctable cause of infertility and the most common cause of secondary (acquired) infertility. Varicoceles are observed more commonly on the left side than the right.
- Varicoceles lead to an increased incidence of sperm immaturity, apoptosis, and necrosis with severe disturbances in meiotic segregation
- Generally, all parameters will improve after repair



Male infertility

- Lead produces toxic effects on the germinal epithelium and altered the quality of semen which was improved by zinc in rats
- The absence of zinc in semen has been linked with low sperm quality in humans
- Zinc supplementation also protected against cadmium poisoning
- It may be prudent to test for heavy metal toxicity in a male in idiopathic infertility.

Rafique M, Khan N, Perveen K, Naqvi A (2009) The effects of lead and zinc on the quality of semen of albino rats J Coll Physicians Surg Pak. 2009 Aug;19(8):510-3

Colagar AH, Marzony ET, Chaichi MJ (2009) Zinc levels in seminal plasma are associated with sperm quality in fertile and infertile men. Nutr Res.Feb;29(2):82-8.

Amara S, Abdelmelek H, Garrel C, Guiraud P, Douki T, Ravanat JL, Favier A, Sakly M, Ben Rhouma K. Preventive effect of zinc against cadmium-induced oxidative stress in the rat testis. J Reprod Dev. 2008 Apr;54(2):129-34. Epub 2007 Apr 10.

Male infertility

- A diet high in antioxidants such as vitamin C and vitamin E has been proposed to improve the quality of sperm by decreasing the number of free radicals that may cause membrane damage.
- Additionally, the use of zinc, fish oil, and selenium has been shown to be of benefit in some studies.
- Folic acid has been shown to reduce DNA damage in men that have had chemotherapy treatment
- One trial with zinc sulphate and folic acid significantly increased sperm concentration in sub fertile males.
- L-Carnitine (LC) and Acetyl-L-carnitine (ALC) are highly concentrated in the epididymis and play a crucial role in sperm metabolism and maturation. They are related to sperm motility and have antioxidant properties.

Rubenstein J, Brannigan RE (2008) Infertility, Male, Medscape, http://emedicine.medscape.com/article/436829-treatment

Ebisch IM, Pierik FH, DE Jong FH, Thomas CM, Steegers-Theunissen RP Does folic acid and zinc sulphate intervention affect endocrine parameters and sperm characteristics in men? Int J Androl. 2006 Apr;29(2):339-45.

Zhou X, Liu F, Zhai S(2007) Effect of L-carnitine and/or L-acetyl-carnitine in nutrition treatment for male infertility: a systematic review. Asia Pac J Clin Nutr. 2007;16 Suppl 1:383-90.

Lignans

- Lignans are associated with the normal homoeostasis of sex hormones of both men and women.
- Research shows they may offer broad health benefits for prostate health, bone health, breast health, skin health, reducing symptoms of menopause, heart health, hair loss and inflammation.
- Lack of fruit, vegetables, grains and food processing can cause a deficiency in the diet.

Lignans

- In addition to diet, factors such as intestinal microflora, smoking, antibiotics, and obesity affect circulating lignan levels in the body. (Adlercreutz 2007)
- Lignan-rich diets therefore may be beneficial, particularly if consumed for life.

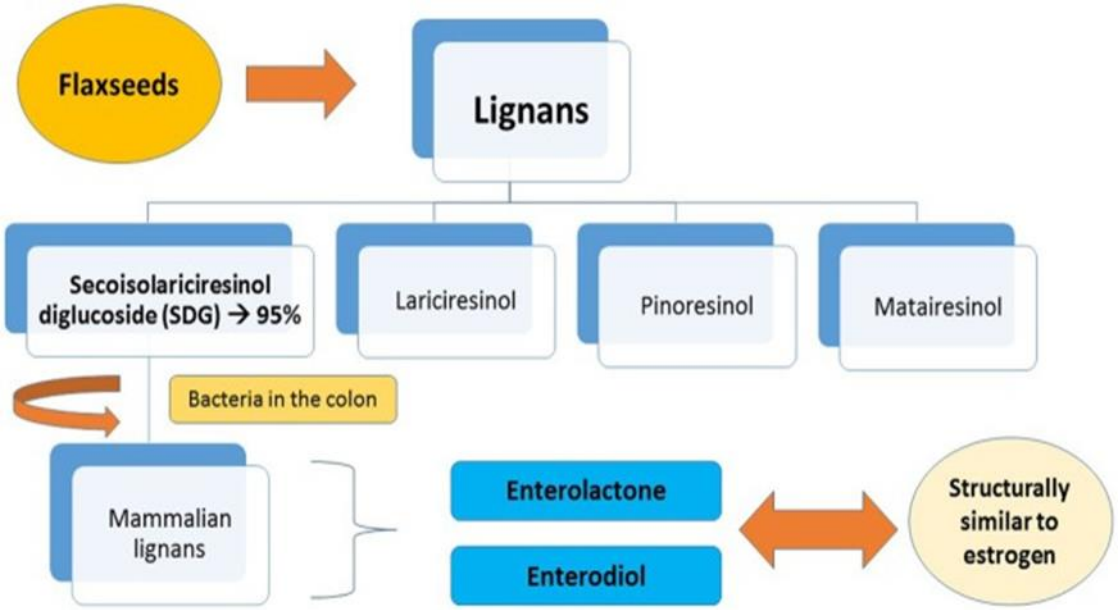
Lignans

What makes lignans so unique is that they are not only present in plants, but our bodies make them through a conversion process in the colon. In humans they are called "mammalian lignans." Lignans are thought not to be oestrogenic themselves but when the plant lignan SDG (from flaxseed hull) is ingested, it is converted in the colon by gut microflora to the mammalian oestrogenic lignan compounds enterodiol (ED) and enterolactone (EL). Many studies have shown the important health benefits that exist due to this conversion of flax lignan in the body. (Setchell & Adlercreutz, 1988).

Lignans

Individual differences in the metabolism of lignans, possibly due to gut microbes, do influence the biological activities and health effects of these compounds.

Do people eat and chew the husk?



Antioxidant activity

- Many health benefits from flaxseed lignans are due to their antioxidant activity, primarily from the hydroxyl radical scavengers. Enterodiol and Enterolactone have higher antioxidant activity than plant lignan SDG and are effective antioxidants against DNA damage and lipid peroxidation.

SDG as an antioxidant

- In a study at the University of Saskatchewan College of Medicine, tests were performed to determine the effectiveness and potency of SDG isolated from flaxseed as an antioxidant, along with its mammalian metabolites secoisolariciresinol (SECO), Enterodiol (ED) and enterolactone (EL). Vitamin E was also tested for a comparison. The results of the tests show that the metabolites of SDG have strong antioxidant activity. In comparison to vitamin E, SDG was 1.27 times more potent as an antioxidant. However, the lignan EL was 4.35 times, more potent, SECO was 4.86 times more potent, and ED was 5.02 times more potent than vitamin E.
- The above studies showed that the higher the concentration of SDG, the greater the antioxidant effect

Kailash Prasad 1Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada Antioxidant activity of secoisolariciresinol diglucoside-derived metabolites, secoisolariciresinol, Enterodiol, and enterolactone Journal International Journal of Angiology Publisher Springer New York ISSN 1061-711 (Print) 1615-5939 (Online)Issue Volume 9, Number 4 / September 2000

Inflammation

- The presence of large amounts of lignans can lead to a decrease in several inflammatory markers

Lowcock EC, Cotterchio M, Boucher BA. Consumption of flaxseed, a rich source of lignans, is associated with reduced breast cancer risk. Cancer Causes Control (2013) 24:813–6.10.1007/s10552-013-0155-7 [PubMed]

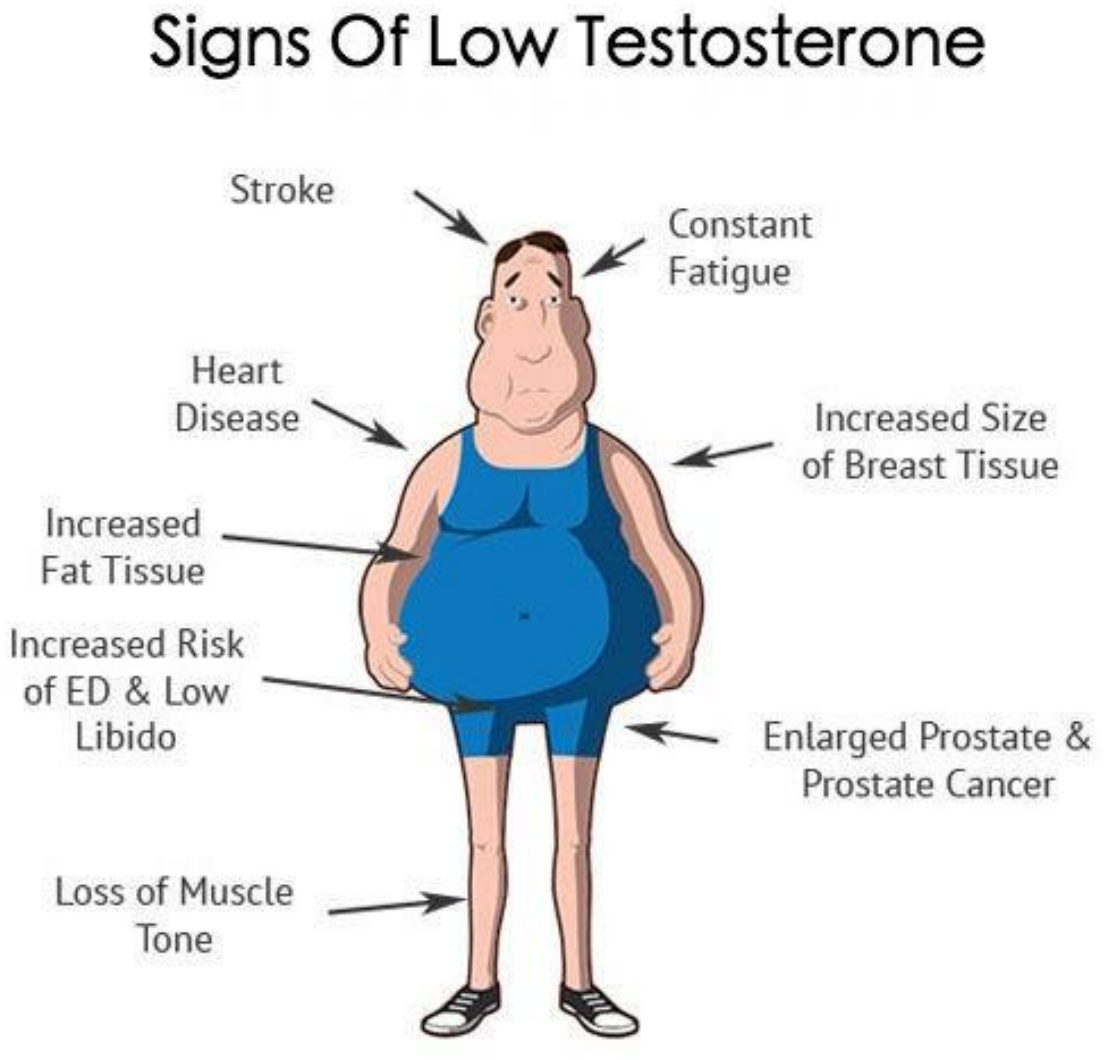
Buck K, Zaineddin AK, Vrieling A, Linseisen J, Chang-Claude J. Meta-analyses of lignans and enterolignans in relation to breast cancer risk. Am J Clin Nutr (2010) 92(1):141–53.10.3945/ajcn.2009.28573 [PubMed]

Cardiac benefits

- Diets rich in foods containing plant lignans have been consistently associated with reductions in risk of cardiovascular disease. Recent work has demonstrated the reduction of hypercholesterolaemic atherosclerosis is greater with plant SDG lignan than with the whole flaxseed. SDG and its metabolites were reported to exhibit cardiovascular protective effects, where they lowered total cholesterol, LDL-cholesterol (LDL-C), and triglyceride levels and normalised HDL-cholesterol (HDL-C) and glucose metabolism, leading to less cardiovascular complications (Zhang W. et al., 2008; Zanwar et al., 2013, 2014). SDG consumption may protect against the development of chronic diseases, such as cardiovascular diseases (Mathieu et al., 2009; O'Keefe et al., 2009; Adolphe et al., 2010).
- Plant SDG lignans are also potent inhibitors of platelet-activating factor, a mediator of inflammation.

Oestrogen dominance in men

- Erectile dysfunction
- Infertility
- Stunted growth during puberty
- The development of male breasts
- Persistent fatigue
- Insomnia
- Night sweats or excessive day sweating
- Water retention
- Loss of sex drive
- Low bone density (osteoporosis)
- Mood swings, anxiety, or depression.
- Body hair loss.
- Loss of muscle mass.
- Increased body fat.



Flaxseed lignans

- Flaxseed ingestion produces large amounts of mammalian lignans with weak oestrogenic / anti-oestrogenic properties. In tests, these properties reduced adult relative prostate weight and cell proliferation, suggesting potential protection against prostatic disease, without affecting sex hormone levels.

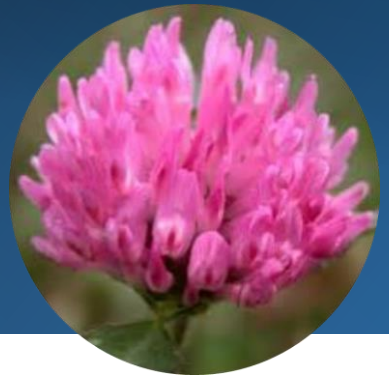
Tou JC, Chen J, Thompson LU. **...** *J Toxicol Environ Health* A *56*:*555*–570, 1999.

Plant lignans in the diet

- Vegetarian men have lower incidence of prostate cancer than non-vegetarian males. This is partly due to the higher level of plant lignans consumed by vegetarians. In addition to their oestrogenic activity, these plant compounds can interfere with steroid metabolism and bioavailability, and inhibit enzymes, such as tyrosine kinase and topoisomerase, which are crucial to cellular proliferation.

Eur Urol, 35(5-6): 377, 1999

Red Clover



Men in Eastern countries have much healthier prostates than men in Western countries. The increased prevalence of BPH and prostate cancer among Western men may be the result of Western men not eating enough isoflavone-containing foods. By comparison, Japanese men are known to have higher plasma levels and urinary excretion of plant-based isoflavones. Researchers believe this difference in dietary intake is a main cause of prostate health issues in Western men.

Scientific evidence exists to support the claim that isoflavones relieve the symptoms of BPH and nighttime urination.

Red Clover also supports bone, respiratory and cardiovascular health (anti-clotting).

A natural source of isoflavones and contains four phytooestrogens so very broad.

Science-based Review Found Red Clover Isoflavones Relieve BPH Symptoms

STAMFORD, Conn., Jan. 30 /PRNewswire-FirstCall/ -- A review article published in the current issue of Journal of Alternative and Complementary Medicine (volume 8, number 6). Aaron Katz.

Urology 2008 Feb;71(2):185-90; discussion 190. doi: 10.1016/j.urology.2007.08.068.
Effects of one-year treatment with isoflavone extract from red clover on prostate, liver function, sexual function, and quality of life in men with elevated PSA levels and negative prostate biopsy findings
Paul F Engelhardt 1, Claus R Riedl
Affiliations expand
PMID: 18308079 DOI: 10.1016/j.urology.2007.08.068

Lignan Plus

Nutrition Information

1 capsule (recommended daily intake) provides:

Flax Lignan SDG (seco-isolariciresinol diglucoside)	35mg
Limonene	80mg
Red Clover Standardised Extract (Minimum 8% Isoflavones)	35mg
L. bulgaricus	$2x10^9$ (2 billion)
L. plantarum	viable cells

Suitable for vegetarians & vegans

Product Code: 5003
30 & 60 capsules

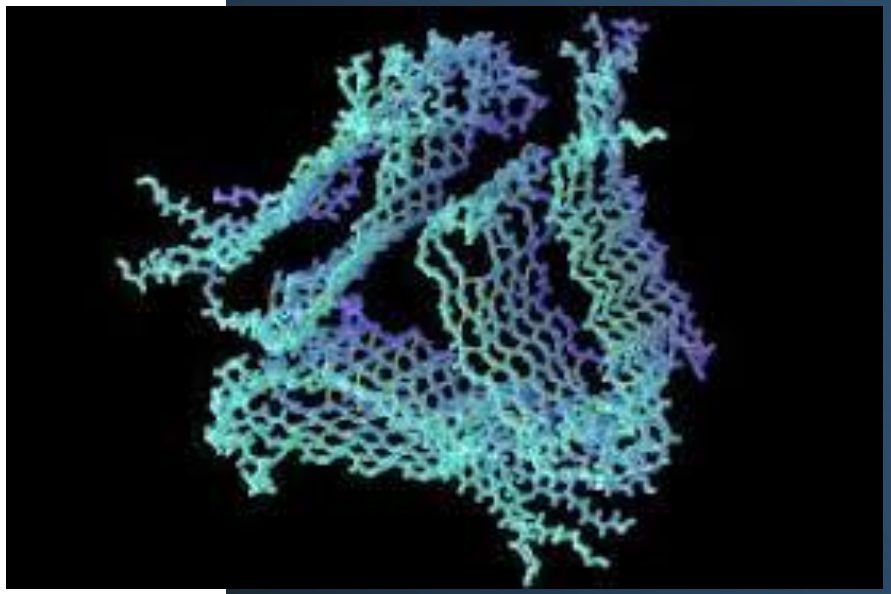
Stroke

- Most epidemiological evidence suggests a reduced risk of stroke associated with high dietary fish consumption particularly in elderly persons and following standard dose-response of omega-3 fatty acids and particularly DHA. DHA becomes incorporated into the cell wall structure and stabilises existing plaque
- PPI's increase risk of heart attack, dementia and stroke

- Pello Lázaro AM, Cristóbal C, Franco-Peláez JA, et al. Use of proton-pump inhibitors predicts heart failure and death in patients with coronary artery disease. PLoS One. 2017;12(1):e0169826. doi: 10.1371/journal.pone.0169826

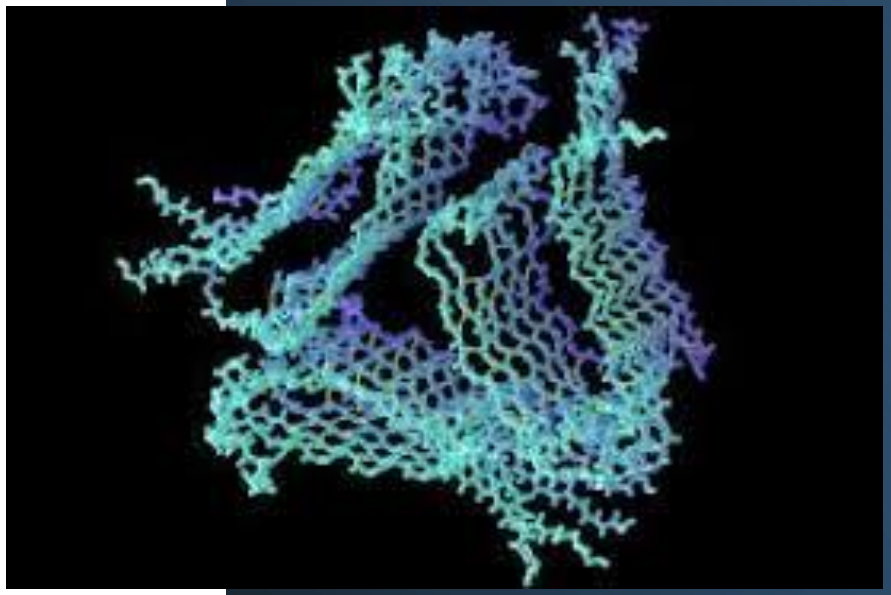
Brain cell membrane health

- A mixture of three naturally occurring dietary compounds: choline, uridine and DHA. Choline can be found in meats, nuts and eggs, and omega-3 fatty acids are found in a variety of sources, including fish, eggs, flaxseed and meat from grass-fed animals. Uridine is produced by the liver and kidney and is present in some foods as a component of RNA.
- These nutrients are precursors to the lipid molecules that, along with specific proteins, make up brain-cell membranes, which form synapses. To be effective, all three precursors must be administered together. http://news.mit.edu/2012/alzheimers-nutrient-mixture-0709



DHA and AD

- The apolipoprotein E ε4 (APOE4) allele identifies a unique population that is at significant risk for developing Alzheimer disease (AD). Docosahexaenoic acid (DHA) is an essential ω-3 fatty acid that is critical to the formation of neuronal synapses and membrane fluidity.
- Several observational and clinical trials of ω-3 in the predementia stage of AD suggest that ω-3 supplementation may slow early memory decline in APOE4 carriers. The association of cognitive benefit with DHA supplementation in predementia but not AD dementia suggests that early ω-3 supplementation may reduce the risk for or delay the onset of AD symptoms in APOE4 carriers.

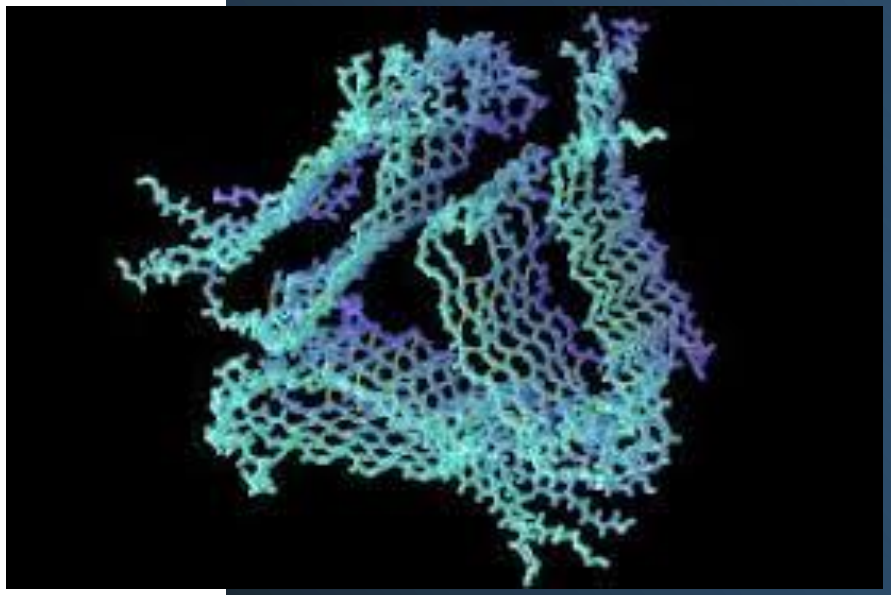


DHA and AD

Review January 17, 2017

Association of Docosahexaenoic Acid Supplementation With Alzheimer Disease Stage in Apolipoprotein E ε4 Carriers

Hussein N. Yassine, MD[1]; Meredith N. Braskie, PhD[2]; Wendy J. Mack, PhD[3]; et al Katherine J. Castor, PhD[4]; Alfred N. Fonteh, PhD[4]; Lon S. Schneider, MD[5,6]; Michael G. Harrington, MB, ChB[4]; Helena C. Chui, MD[5]JAMA Neurol. Published online January 17, 2017. doi:10.1001/jamaneurol.2016.4899



Cardiovascular disease

- In the UK, diseases of the heart and circulation (cardiovascular disease), including heart attacks and stroke, cause a quarter of all deaths in the UK; that's more than 170,000 deaths each year. BHF
- Nearly 1.5 million men have coronary heart disease in the UK and around 119,000 men have a heart attack each year.
- A study that BHF have funded suggests a link between testosterone and heart disease, which may explain why men are more at risk of heart disease than women. The discovery offers hope of treatments to reduce that risk.

Cardiovascular disease

- The researchers found that testosterone may be linked to the hardening of blood vessels associated with heart disease. The results, published in the journal Scientific Reports, might help explain why men have a greater risk of heart attacks than women of similar age.
- They found that the hormone triggers cells from the blood vessels to produce bone-like deposits – calcification which causes blood vessels to harden and thicken, which means the heart must work harder to pump blood around the body. It is strongly linked to increased risk of heart attack and stroke. Calcification can also affect the heart's valves, meaning that the valves cannot open and shut properly and may need to be replaced.

Cardiovascular do’s

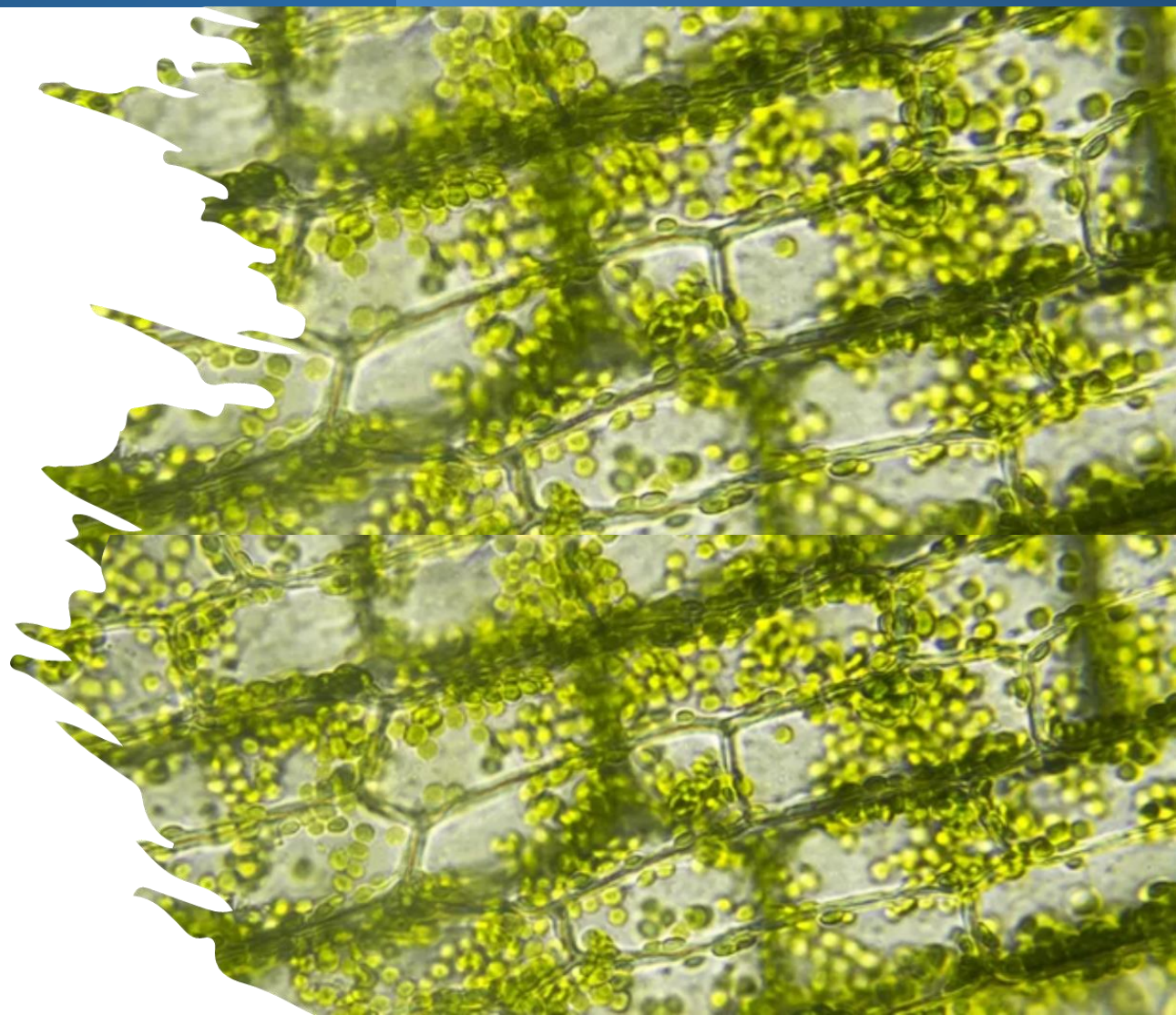
- stop smoking
- do regular physical activity
- eat a healthy, balanced diet including five portions of fruit and vegetables a day
- maintain a healthy weight
- not drink more than the recommended amount of alcohol
- get blood pressure and cholesterol level checked regularly
- control blood glucose, blood pressure and cholesterol levels if you have diabetes

Omega 3-considerations

- Population studies have indicated that low levels of DHA or DHA/EPA (O3)combined in blood lipids are at significantly greater risk for coronary heart disease, fatal ischemic events and sudden cardiac death
- The increase in Omega 6 worldwide decreases the natural production of O3 and an increase in arachidonic acid (AA)
- Normalising the O3 to O6 ratio will provide cardio protection
- EPA and DHA and their metabolites have important biologic functions, including effects on membranes, eicosanoid metabolism, and gene transcription.

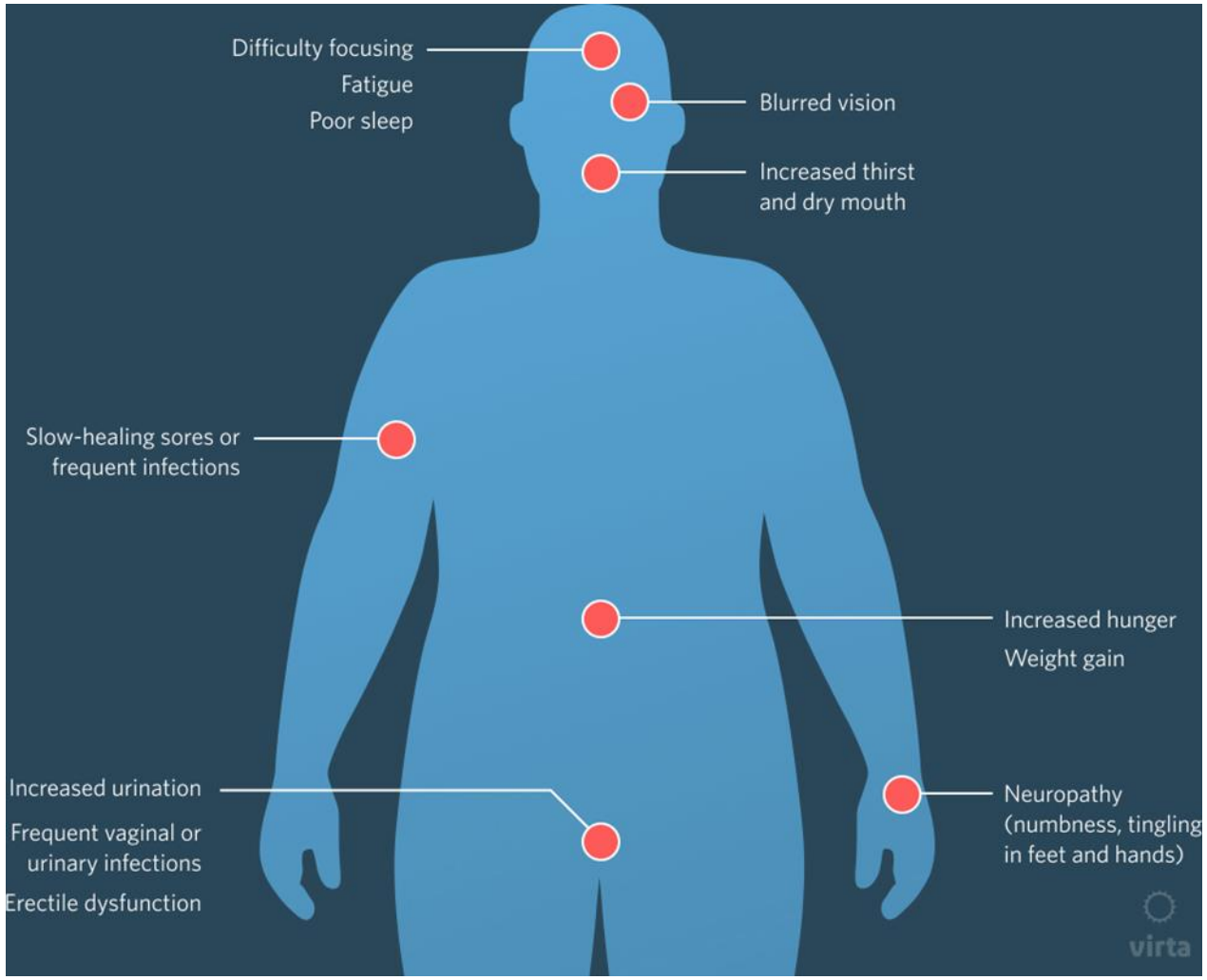
DHA considerations

- DHA is an essential fatty acid universally needed in neurological tissues, for vascular tissue and is required for the maintenance of the central nervous system, the development of the brain and for visual function.
- However, DHA and its metabolites have several newly recognised multifunctional roles to play in other vital biochemical functions beyond that of simply being the major structural component in many biological membranes. DHA may have an integral role in modulating many vital intra-cellular activities.



- Supplementation with purified DHA increases LDL particle size, reduces serum triglycerides, and increases HDL cholesterol, as well as improves vascular function and blood pressure.
- Therefore, for subjects with type 2 diabetes, DHA may have more therapeutic value than EPA as a food additive.

Docosahexaenoic Acid But Not Eicosapentaenoic Acid Increases LDL Particle Size in Treated Hypertensive Type 2 Diabetic Patients Richard J. Woodman et al, Diabetes Care 2003 Jan; 26(1): 253-253



Fish oil research

- A meta-analysis including thirty randomized controlled trials showed that prolonged fish oil intake may reduce heart rate, especially in populations with a high baseline heart rate. In dyslipidemic males and postmenopausal women, this decrease appears to be mediated by DHA rather than EPA. Research has demonstrated that intakes of DHA/EPA as low as 700 mgs daily are capable of showing clinically meaningful blood pressure reductions.

DHA

- DHA rather than EPA is preferentially incorporated into the myocardial cell membrane, although fish oils often contain mainly EPA, the myocardium, including mitochondrial membranes, accumulates DHA as the principal n-3 PUFA, even after feeding purified EPA. Research has found that the DHA fraction of fish oil dramatically alters the mitochondria in the heart muscle increasing healthy heart energy production.

DHA

- This influences the beta-adrenergic system to a greater extent than EPA another important mechanism involved in the hypotensive and antiarrhythmic action of DHA
- Additionally, DHA stimulates release of ATP increasing vasodilation by stimulating nitric oxide (NO)
- A combination of this and the decrease in noradrenaline levels has a blood pressure lowering effect

A keystone to resolving inflammation

- Because atherosclerosis is a low-grade systemic inflammatory condition, it is likely that reduced formation of lipoxins, resolvins, protectins, maresins, and nitrolipids plays a significant role in its pathogenesis.
- Resolvins are anti-inflammatory and immunoregulatory products of the metabolism of DHA and EPA. EPA produces E series resolvins while DHA produces D series resolvins.

DHA-cardiac health

- Triglyceride: cholesterol ratio
- Blood viscosity
- Blood platelet reactivity
- Other thrombogenic risk factors
- Postprandial lipemia (carbohydrate-induced
- Blood fat surges after a meal)
- Heart rate variability
- Arterial compliance
- Antiarrhythmic effects
- Increases red blood cell membrane fluidity

DHA Summary

- Structure
- Universally needed in neurological tissues
- Major structural component of the

brain tissue and nervous system

- (DHA) is critical to the formation of neuronal

synapses and membrane fluidity.

- Cognition
- Maintenance of brain and eye health
- Predominant in cardiac cells
- Cardiovascular health/circulation
- Inflammation
- Foetal and adult immune health
- Sperm health

RosehipQ10

Bionutri®

Nutrition Information

Recommended Daily Intake

1 capsule, 3 times a day with food

3 capsules provide

Rosehip PE 20:1 (*Rosa mosquata* hip)	600mg
Pomegranate Extract (*Punica granata* hulls) (Min 40% Ellagic Acid)	300mg
Quercetin	300mg
Ginger PE 20:1 (*Zingiber officinalis* root)	150mg
Coenzyme Q10 (micellised)	57mg
Green Tea PE 4:1 (*Camellia sinensis* leaf)	90mg

Suitable for vegetarians & vegans.

Not to be taken by people on blood-thinning drugs such as warfarin, heparin, coumarin, aspirin.

Product Code: 4083
30 & 90 capsules

Fish Oil DHA 5:1 EPA

Bionutri®

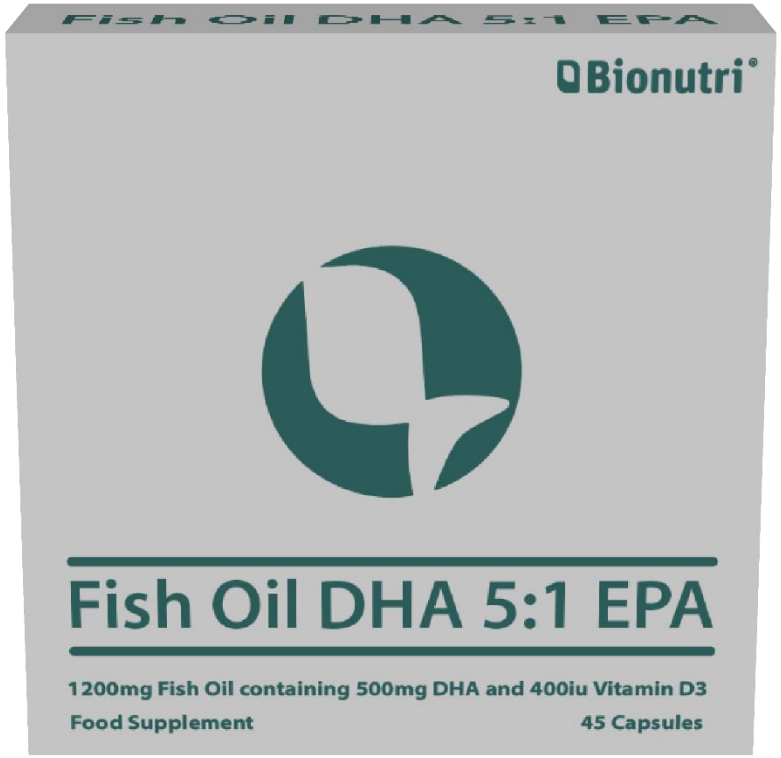
Nutrition Information
1 capsule (daily intake) provides

Fish Oil (Triglyceride)	1200mg
Providing Total Omega 3	720mg
DHA (docosahexaenoic acid)	500mg
EPA (eicosapentaenic acid)	100mg
Vitamin D3	10µg
Vitamin E	5mg

In a Fishgel capsule

Adults: One capsule daily
Children: (From five years of age) may take the contents of one capsule daily, punctured and taken by spoon or mixed with food

Not to be taken by people on blood thinning drugs such as warfarin, heparin, coumarin or aspirin.



Vegan DHA High-DHA algal oil, (sp. Schizochytrium) free of odour and taste.

Bionutri®

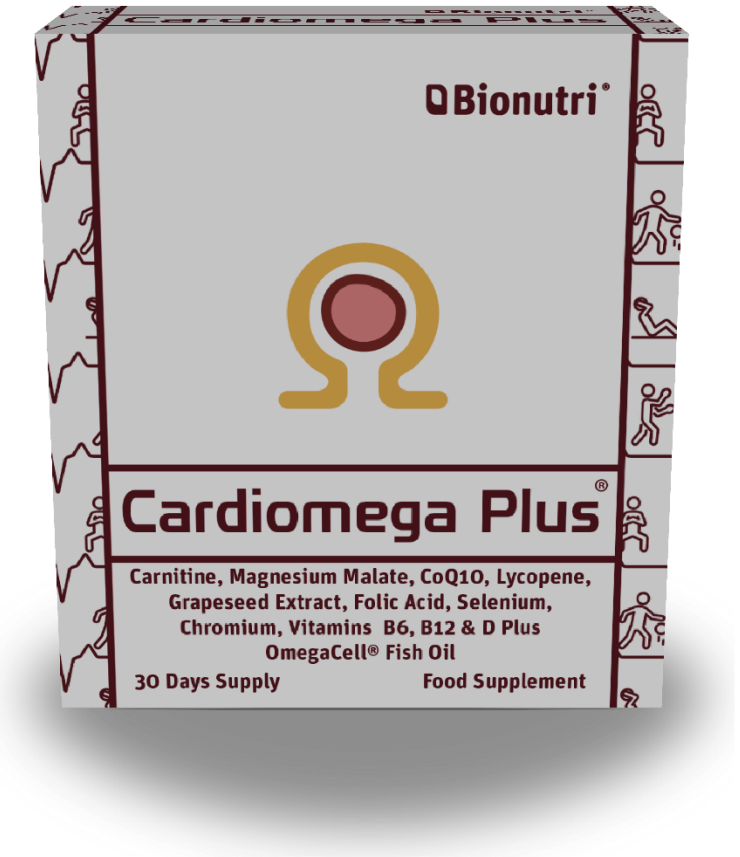
- Each 500mg vegan omega 3 DHA algae oil capsule contains:
- 250mg minimum DHA (matches the European Food Safety Authority (EFSA) recommended daily intake of DHA) plus EPA
- Anti-oxidants – vitamin C, vitamin E and rosemary extract.

Cardiomega

Bionutri®

Fish Oil Triglyceride
providing total
Omega 3 720mg
DHA 500 mg
EPA 100 mg
Vitamin D3 10 ug
Vitamin E 5mg
In a fish gel capsule

- N-acetyl carnitine
- CoQ10 (micellised)
- Magnesium
- Lycopene (micellised)-LDL oxidation
- Vitaflavan (grapeseed extract)
- Vitamin B6
- Folic acid
- Selenium
- Chromium



Nettle Plus

3 capsules (daily intake) provide

- Dandelion Root 750mg

(Taraxacum officinalis root)

- Nettle Leaf Extract 4:1 525mg

(Urtica dioica leaf)

- Dong Quai Extract 6:1 300mg

(Angelica sinensis root)

- Hibiscus Extract 150mg

(Hibiscus rosa-sinensis flower)

- Blueberry Extract 4:1 30mg

(Vaccinium sp fruit)

- Alpha Lipoic Acid 60mg
- Vitaflavan® 15mg

(Grape Seed Extract)

(Min 75% Oligomeric Procyanidins)

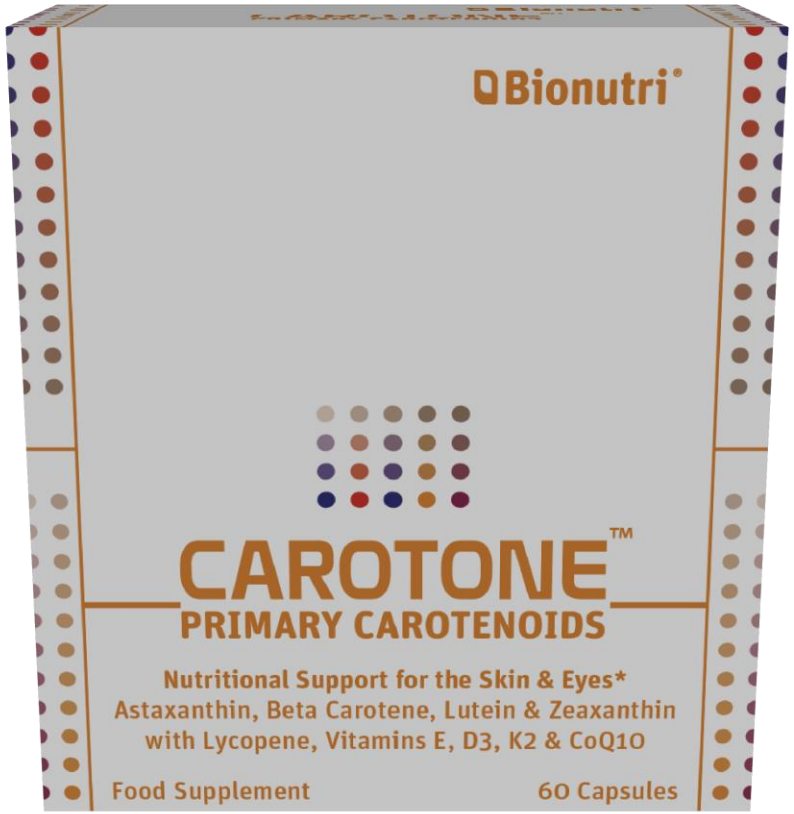
Carotone

NUTRITION INFORMATION

1 capsule (recommended daily intake) provides

Beta Carotene	8mg
Equivalent Vitamin A	1.33mg
Astaxanthin	6mg
Lutein	4mg
Zeaxanthin	1mg
Lycopene	10mg
Co-Enzyme Q10	20mg
Vitamin D3	10mcg
Vitamin E	10mg
Vitamin K2 (MK-7)	100mcg
In a base of Cold Pressed Avocado Oil	200mg

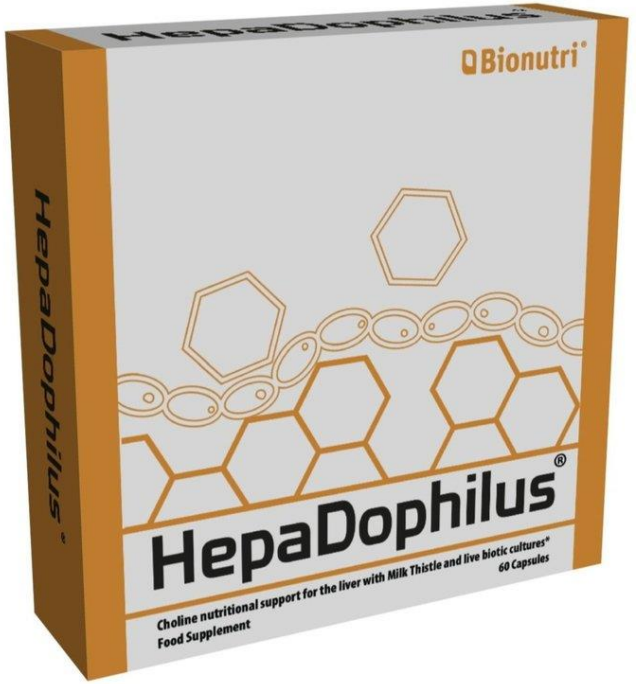
20, 40 & 60 Capsules



Hepadophilus

Bionutri®

NUTRITION INFORMATION		Ingredients:
2 capsules (recommended daily intake) provide		Milk Thistle Seed Extract, Lactobacillus bulgaricus, Choline Bitartrate, Lactobacillus acidophilus, Lactobacillus rhamnosus, Lactobacillus casei, Lactobacillus plantarum, Silicon dioxide, Magnesium stearate, Corn maltodextrin, Microcrystalline Cellulose. **Capsule Shell:** Vegetarian Hydoxypropylmethyl Cellulose
Lactobacillus acidophilus CUL60	5 Billion viable cells	
Lactobacillus plantarum CUL66	5 Billion viable cells	
Lactobacillus bulgaricus CUL65	5 Billion viable cells	
Lactobacillus rhamnosus CUL63	5 Billion viable cells	
Lactobacillus casei CUL06	5 Billion viable cells	
Milk Thistle Seed Extract	275mg	
(Silybum marianum seed, Min 80% Silymarin)		
Choline Bitartrate	225mg	
Recommended Daily Intake: Two capsules daily with food		

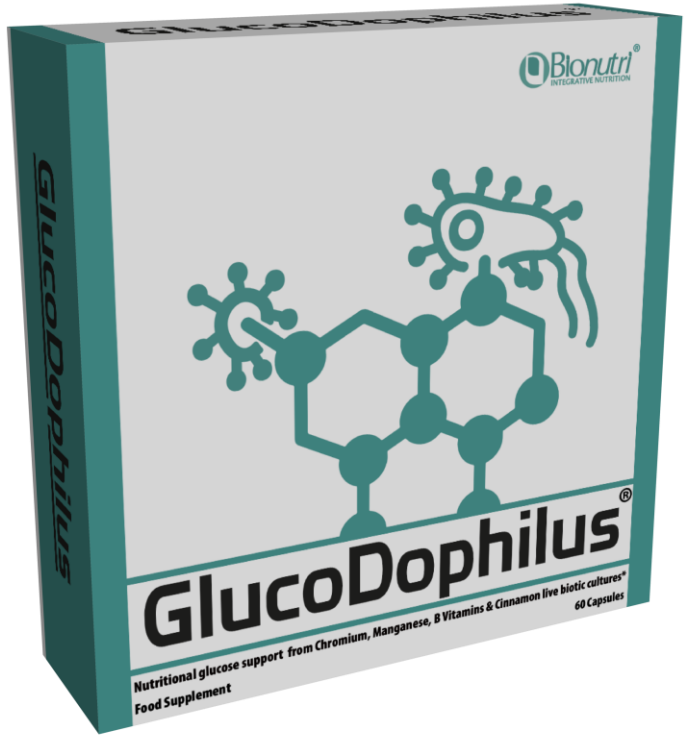


Glucodophilus

Bionutri®

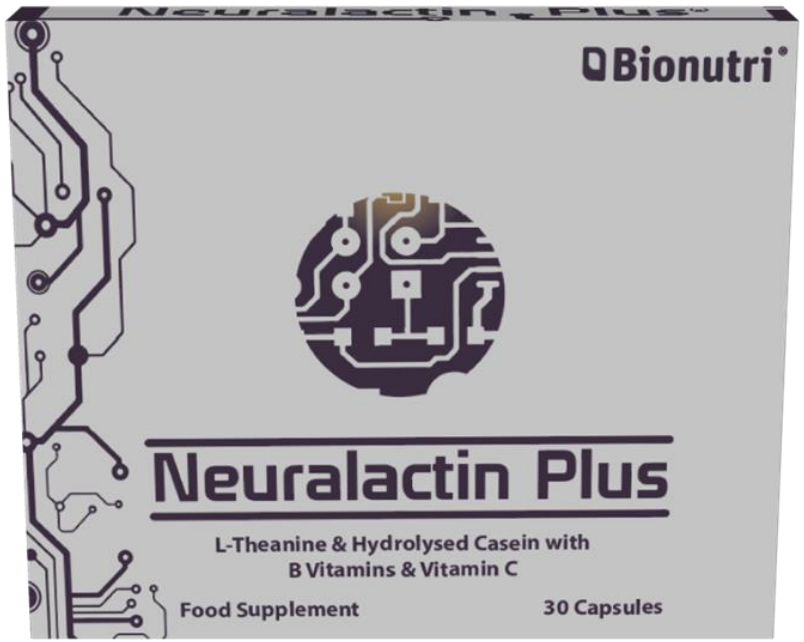
Nutrition Information 2 Capsules Provide:		NRV**	INGREDIENTS:
Lactobacillus acidophilus [CUL60]	1.875 Billion viable cells		Magnesium Malate, Lactobacillus bulgaricus, Cinnamon Bark, Microcrystalline Cellulose, Lactobacillus acidophilus Co-culture, Calcium Pantothenate, Pyridoxine Hydrochloride, Silicon Dioxide, Nicotinamide, Magnesium Stearate, Thiamine Mononitrate, Bifidobacterium Co-culture, Manganese Gluconate, Riboflavin. **Capsule Shell:** Vegetarian Hydroxypropylmethyl Cellulose.
Lactobacillus acidophilus [CUL21]	1.875 Billion viable cells		
Bifidobacterium animalis subsp. lactis [CUL34]	1.875 Billion viable cells		
Bifidobacterium bifidum [CUL20]	0.0625 Billion viable cells		
Lactobacillus bulgaricus [CUL65]	5 Billion viable cells		
Cinnamon Extract (Min 20% Polyphenols)	100mg		
(Cinnamomum cassia bark)			
Chromium Picolinate	0.5mg	125	
Providing elemental Chromium	50µg		
Magnesium Malate	426mg		**Recommended Daily Intake:** Two capsules daily with food.
Manganese Gluconate	5mg		
Providing elemental Manganese	50µg	2.5	
Vitamin B1	5mg	455	Do not exceed the stated recommended daily intake.
Vitamin B2	5mg	357	
Nicotinamide	11mg		
Providing Vitamin B3	10mg	62.	KEEP OUT OF REACH OF CHILDREN Food supplements must not be used as a substitute for a varied and balanced diet and a healthy lifestyle.
Calcium Pantothenate	26mg		
Providing Vitamin B5	20mg	333	
Pyridoxine Hydrochloride	14mg		
Providing Vitamin B6	10mg	714	

** Nutrient Reference Value



Stress, sleep and anxiety

Bionutri®



Vitamin C Complex

Bionutri®

Aquasol-unique instant pure herb teas

aquasol

- We source the best quality organic herbs around the world, fair trading with skilled farmers who maintain the complexity and full integrity of the herb.
- Superfine grade, smaller granules
- Whole herb is consumed-zero waste
- Liquids, hot and cold, food or yogurts

Aquasol-unique instant pure herb teas

- More bioactive and bioavailable after testing-higher than normal herbal powder
- Better than standardised herbs which may concentrate part of the herb making it more potent and not all of it so not concentrated materials without the wider part
- Aquasol overcomes this by through grinding has a much greater surface area, normally herbs may be 11-25 microns when ours are many times greater-250 microns

Practitioner Support

- Website for your clients to browse www.bionutri.co.uk and a password protected practitioner page where you have access to catalogue pages and webinar listings for online registration (for webinars contact adel@bionutri.co.uk).
- CPD opportunities to join the hundreds of healthcare professionals that visit our free weekly 11-12 Wednesday webinar. A wide range of topics covered plus interactive Q and A. Extensive back catalogue of recorded CPD webinars available. Sign up at www.bionutri.co.uk/practitioner-signup-form
- We are also on Facebook/Bionutri for practitioners/Instagram and LinkedIn (Bionutri)
- Professional Product catalogue
- Technical Support by Zoom/phone or email-Sue McGarrigle ND (suem@bionutri.co.uk), Edward Joy Herbalist (ed@bionutri.co.uk), Rosie Rayner ND rosie@bionutri.co.uk
- Product training-one to one or small groups by telephone or Zoom/Teams.
- Kinesiology samples
- Samples for sensitive clients

Product sources

Practitioner/Patient

Bionutri Ltd
The Natural Dispensary

Ireland-Maria Cadogan at NT Supplies-
www.ntsuppliesireland.com