

## Consuming Vitamin A Boosts Fat Burning in Cold Conditions

A recent study conducted at the Medical University of Vienna's Division of Endocrinology and Metabolism, with involvement from scientists from Harvard University, Boston, and Rutgers University in New Jersey, provided evidence that cold ambient temperatures increase concentrations of vitamin A in both humans and mice, which stimulates the conversion of white adipose tissue into brown adipose tissue – which stimulates fat burning and heat generation.

The preclinical study is published in the journal *Molecular Metabolism*.

White and brown adipose tissues are the two types of fatty depots present in mammals, and previous research has shown that excess calories are mainly stored in white fat during the development of obesity, while, in contrast, brown fat burns energy and thereby generates heat. White fat depots comprise approximately 90% of total body fat stores in humans.

The hypothesis for the clinical



trial hinged on thermogenesis, an adaptive biologic function required for mammals to survive. During this process, white adipose tissue is known to take on the characteristics of the more energy-wasting brown adipose tissue, which results in a quicker burning of calories.

In both humans and mice, exposure to cold temperatures increases levels of vitamin A and its blood transporter, retinol-binding protein, in humans and mice. Most vitamin A reserves are stored in the liver, and cold exposure seems to stimulate the redistribution of vitamin A toward the adipose tissue, the authors wrote. This led to a conversion of white fat to brown fat, with a higher rate of fat burning.

This was determined through cold exposure studies on humans and mice. Thirty healthy, lean subjects were exposed to moderate cold, 14-17 degrees Celsius, which caused their circulating retinol and retinol-binding proteins to increase after 2.5 hours. The phenomenon was also observed in mice exposed to 4 degrees Celsius for 24 hours.

The researchers blocked the vitamin A transporter “retinol-binding protein” in mice, via genetic manipulation. This blunted both the cold-induced rise in vitamin A and the browning of the white fat seen in the absence of genetic manipulation.

Results show that vitamin A plays an important role in the function of adipose tissue and affects global energy metabolism. However, this is not an argument for consuming large amounts of vitamin A supplements if not prescribed, because it is critical that vitamin A is transported to the right cells at the right time.

## Omega-3 Supplementation for Better Liver Functioning in NAFLD Patients

In a small preliminary study, researchers found preliminary evidence suggesting that supplementation with EPA and DHA may improve clinical parameters of non-alcoholic fatty liver disease. The study examined the effects of long-term supplementation of omega-3 fatty acids, and was published in the journal *Nutrients*.

In total, 13 patients in the double-blind, placebo-controlled study were administered a dietary supplement containing approximately 503 mg of DHA and 102 mg of EPA, while a placebo group received olive oil. The daily supplementation lasted for six months. Those who consumed more than 20 g of alcohol per day, steroids, non-steroidal anti-inflammatory drugs, immunomodulatory agents, antibiotics, or omega-3



supplements at least a year prior were excluded from the study, and a wide host of diseases which could cause damage to the liver were considered exclusion-

ary criteria. Compliance with supplementation was verified by serum fatty acid analysis after six months of intervention in both groups.

After six months of intervention, the omega-3s group experienced significant reductions in serum ALP [Alkaline Phosphatase] levels. In addition, a reduction in waist circumference, gamma-glutamyl transferase, total cholesterol, and triglycerides was observed, though statistical significance was not reached.

The ALP reduction signified to the authors of the

study signified a reduction in a predictor of non-alcoholic fatty liver disease, as NAFLD patients in stages 1 and 2 of liver fibrosis are known to have higher levels of the enzyme. Instead of a liver biopsy, the researchers used FibroScan to assess potential liver fibrosis, and it was found that the treated group had a significant decrease in liver fibrosis.

MiR-122 is a micro-RNA believed to optimize liver function, particularly in patients with liver diseases.

### Moringa for Cancer Prevention

A South African study revealed that moringa (drumsticks) (*Moringa oleifera*) has anti-proliferative activity against at least one type of cancer.

The study looked at the effects of moringa on esophageal cancer. To confirm the anti-proliferative effects of moringa, the researchers exposed an esophageal cancer cell line to different dilutions of the plant's crude aqueous extract. They also performed other tests to confirm relevant factors, such as the level of oxidative stress, DNA damage, apoptotic mechanisms, and the expression of proteins.

The researchers found that the treatment with moringa increased lipid peroxidation in the esophageal cancer cells. An increase in lipid peroxidation is a marker of mounting oxidative stress. Under normal circumstances, oxidative stress may lead to cancer. In cancer patients, however, oxidative stress helps break down the cancer cells' antioxidant defenses and kills them in the process.



Further analysis revealed that the treatment caused activation of natural enzymes that trigger apoptosis or cellular death, as well as breakdown of the tumor cells' DNA. The researchers confirmed that moringa could inhibit esophageal cancer by increasing the rate of oxidative stress through lipid peroxidation, enabling DNA fragmentation, and inducing apoptosis.

### Multi-Faceted Benefits of Curcumin

Curcumin (diferuloylmethane) is the active compound (phytochemical) in the common, bright yellow curry spice, turmeric. Indian, Chinese, and Western herbal medicines traditionally use turmeric, of the ginger family, for conditions such as poor digestion, abdominal pain, and distension. In 1999, the World Health Organization recommended it for treatment of acid reflux, flatulence, and functional dyspepsia, as used in Ayurvedic medicine.

The Canadian Society of Intestinal Research, the Gastrointestinal Society's sister charity, provided funding for Dr. Baljinder Salh's research into the benefits of curcumin in colon cancer. Salh and his Vancouver team contributed to a building body of evidence that this flavourful spice can help prevent cancerous cells from developing in the colon.

Curcumin exerts beneficial effects in experimental colitis by mediating the inflammatory processes.



Therefore, it may be useful in the treatment of inflammatory bowel disease.

Other clinical trials support a potential therapeutic role for curcumin specifically in familial adenomatous polyposis, inflammatory bowel disease, ulcerative colitis, colon cancer, pancreatic cancer, hypercholesterolemia, atherosclerosis, pancreatitis, psoriasis, chronic anterior uveitis, and arthritis.



## Diverse Health Benefits of Blue Butterfly Pea Extract

**B**utterfly Pea flower (also scientifically referred to as *Clitoria Ternatea*) is noted for its bright blue edible flowers. Aside from its many culinary uses, the blue butterfly pea vine has been used in Ayurveda as well as traditional Asian and Middle Eastern medicine for centuries.

This potent powder is known to promote vitality and healthy ageing. It is full of antioxidants, including proanthocyanidin, which supports skin collagen and elasticity, and anthocyanin that supports hair and eye health. Both of these ingredients help promote the overall healthy life cycle of cells.

Blue Butterfly powder is a notable nerve tonic, and provides support to the digestive, circulatory, and central nervous systems.

The presence of the anti-oxidant, proanthocyanidin, helps to improve eyesight by increasing blood flow in the capillaries of the eyes which also allows the eyes to adjust to changes in light and improves vision. The

blue butterfly pea vine flowers have been shown to effectively prevent cataracts and glaucoma, correct blurred vision, and reverse retinal damage as well as soothing inflamed and tearing eyes.

The blue butterfly vine flower, rich in bioflavonoids, has been used traditionally to promote hair growth, thicken the hair and reduce greying of the hair.

Anti-oxidants in blue butterfly pea flower stimulate collagen and elastin synthesis helping to rejuvenate the skin, reduce wrinkles and other effects of ageing skin.

Nootropic enhances cognitive functions including heightening intelligence and enhancing memory via acetylcholine localised to the hippocampus.

It acts as an analgesic to relieve pain to the extent that it is used as a local anaesthetic.

It promotes excretion of water, which decreases blood volume thereby lowering blood pressure, also used for fasting but typically temporary weight loss.

## Cinnamon: A Spice with Medicinal Properties

**C**innamon is a spice that is made from the inner bark of trees botanically known as *Cinnamomum*. The distinct smell and flavor of cinnamon are due to the oily part, which is very high in the compound cinnamaldehyde. Scientists believe that this compound is responsible for most of cinnamon's powerful effects on health and metabolism.

Cinnamon is loaded with powerful antioxidants, such as polyphenols. In a study that compared the antioxidant activity of 26 spices, cinnamon wound up as the clear winner, even outranking "superfoods" like garlic and oregano.

It has anti-inflammatory properties. It helps the body fight infections and repair tissue damage. However, inflammation can become a problem when it's chronic and directed against body's own tissues. Cinnamon may be useful in this regard. Studies show that this spice and its antioxidants have po-



tent anti-inflammatory properties.

Cinnamon may improve some key risk factors for heart disease, including cholesterol, triglycerides and blood pressure.

Cinnamon has been shown to significantly increase sensitivity to the hormone insulin. Cinnamon is well known for its blood-sugar-lowering properties. Apart from the beneficial effects on insulin resistance, cinnamon can lower blood sugar by several other mechanisms. First, cinnamon has been shown to decrease the amount of glucose that enters your bloodstream after a meal. It does this by interfering with numerous digestive enzymes, which slows the breakdown of car-

bohydrates in your digestive tract.

It has shown to have beneficial effects on neurodegenerative diseases. Cinnamon has been shown to lead to various improvements for Alzheimer's and Parkinson's disease in animal studies.

Animal and test-tube studies indicate that cinnamon may have protective effects against cancer.

Cinnamaldehyde, one of the main active components of cinnamon, may help fight various kinds of infection.

Cinnamon oil has been shown to effectively treat respiratory tract infections caused by fungi. It can also inhibit the growth of certain bacteria, including *Listeria* and *Salmonella*. It also has antifungal properties.

Cinnamon extracted from Cassia varieties is thought to help fight against HIV-1, the most common strain of the HIV virus in humans.