Niacin Therapy (Vitamin B3)

Niacin, also known as vitamin B3, has been used for many years to decrease cholesterol in patients at risk for cardiovascular events. Niacin therapy has been shown to decrease LDL and triglycerides and increase HDL levels. Niacin's therapeutic effect is thought to be related to inhibition of lipolysis in adipose tissue, as well as via reduction of hepatic VLDL secretion. A red, flushed face is a well-known side effect of niacin use. Because the flushing is mediated by prostaglandin activation, aspirin can reduce flushing by altering or blocking the prostaglandin mediated pathway. Niacin therapy is also associated with hyperglycemia and hyperuricemia.



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Mechanism

Inhibits Lipolysis in Adipose Tissue
Tied-up with Lip-lights
Niacin's therapeutic effect is thought to be related to inhibition of lipolysis in adipose tissue. This limits free fatty acids available for the liver to produce triglycerides and VLDL, and consequently LDL.

Reduces Hepatic VLDL Secretion
Tied-up Veiled-lady-bug-devil with Liver
Niacin therapy leads to a reduction in hepatic VLDL secretion via decreased free fatty acid availability for the liver to produce TG and VLDL. Decrease in free fatty acids also suppresses hepatic expression of apolipoprotein C3 and leads to reduced VLDL production.

Indications

Decrease Triglycerides
Down-arrow TAG-triceratops
Triglycerides are esters derived from glycerol and three fatty acids. High levels of triglycerides in the bloodstream have been linked to atherosclerosis, and niacin therapy can decrease triglyceride levels in the body.

Decrease LDL
Down-arrow Ladybug-devil
Low-density lipoprotein (LDL) is associated with health problems, including heart disease, which is why it is commonly called the "bad" cholesterol. Niacin decreases blood LDL levels.

Increase HDL
Up-arrow Hot-dog-angel
High density lipoprotein particles remove fats like cholesterol from cells and transport it back to the liver for excretion or re-utilization. Therefore, HDL is often referred to as "good" cholesterol. Niacin is associated with increased HDL levels in users.

Side Effects

Flushing
Flashlight on flushed face
Flushing is a well known side effect of niacin use. Flushing usually lasts for about 15-30 minutes and is mediated by prostaglandin activation.

Decreased by Aspirin
Down-arrow Aspirin
Because the flushing related with niacin use is mediated by prostaglandin activation, aspirin can reduce flushing by altering or blocking the prostaglandin mediated pathway.

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Hyperglycemia

Hiker-glue-bottle

High doses of niacin have been associated with elevations in blood sugar, thereby worsening diabetes mellitus.

Hyperuricemia

Hiker-unicorn

Hyperuricemia is another side effect of taking high doses of niacin and may exacerbate gout in certain patients.

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