

# AGING ARTERIES: POMEGRANATES MAY PREVENT PLAQUE BUILDUP

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*"A man is as old as his arteries."*

Thomas Sydenham, MD, English Physician, 1624-1689

## HOW PLAQUE FORMS IN THE ARTERIES

Atherosclerosis—also known as plaque—is buildup of fatty deposits that form on the inside walls of arteries. Plaque is a combination of bad cholesterol that becomes oxidized, and other substances such as calcium and blood components that stick to the artery wall lining. As plaque builds up in an artery, the artery gradually narrows and can become clogged. The narrower the artery becomes, the less blood can flow through. When this happens, it causes blood clotting inside the artery.

If a blood clot totally blocks the artery, it stops blood flow completely. This is what triggers most heart attacks and strokes. There are usually no pain symptoms to warn someone such an event is about to occur, until one or more arteries become so clogged with plaque that blood flow is severely reduced, particularly in the heart or brain.

## PLAQUE BUILDUP BEGINS IN THE INNER LAYER OF THE ARTERY

Plaques have various sizes and shapes and are covered by a hard shell or scar. Some plaques are unstable and can rupture or burst. Most plaque buildup occurs in medium to large arteries and many investigators suspect that this buildup begins with changes in the endothelium, the innermost layer of the artery.

These changes cause white blood cells to stick to the endothelial cells, weakening the barrier between the endothelium and the other layers of the artery. This allows fats, cholesterol, calcium, platelets

and cellular debris to accumulate in artery walls. In turn, this accumulation can stimulate other arterial wall changes that lead to the additional thickening of the endothelium and the formation of plaques. White blood cells go to the site of plaques and try and engulf the debris and fat. As they become enlarged they are referred to as "foam cells."

## A HEALTHIER LIFESTYLE CAN REDUCE RISK FACTORS

Atherosclerosis is a slow, progressive condition that often starts in childhood. By age 65 it affects one out of every two adults. Scientists at the National Heart, Lung and Blood Institute are studying why and how the arteries become damaged with age, how plaques develop and change over time, and why plaques can break open and lead to blood clots.

There are a number of other risk factors that can lead to plaque formation in the arteries, such as smoking, high blood pressure and high blood cholesterol that can be modified with diet restrictions, daily exercise, and other healthier lifestyle changes. The more risk factors you have, the more likely it is that you have atherosclerosis.

### WHAT HAPPENS DURING ATHEROSCLEROSIS?



- 1 LDL cholesterol accumulates in the arterial wall.
- 2 Foam cells engulf fat forming early plaque.
- 3 Plaque may release and form a blood clot, thereby blocking blood flow.

However, scientists believe those that live a healthier lifestyle have a decreased risk of plaque buildup. Healthy lifestyle choices can work independently or in unison to promote the vitality of endothelial cells and contribute to reducing the risk of cardiovascular disease.

## ANTIOXIDANTS SHOWN TO IMPROVE BLOOD VESSELS

The beneficial health effects attributed to the consumption of particular fruits and vegetables are related, in part, to their antioxidant activity. Of special interest is the association that certain plant antioxidants such as polyphenols are showing evidence of suppressing oxidant damage in the blood vessels. This results in improvement of the lining of the blood vessels and lowers the risks significantly for cardiovascular diseases.



A recent study documented 4,046 heart attacks and 1,572 strokes in men. Over a 24-year follow up period 43,880 men were evaluated. The follow up period showed a higher dietary intake of antioxidants, such as polyphenols (flavanones and anthocyanins) from fruits, were associated with a reduced risk of stroke and heart attack.<sup>1</sup>

The scientists reported that the highest average intakes of anthocyanins were associated with a 14 percent lower risk of heart attack, while the highest average intakes of flavanones were associated with a 22 percent lower risk of ischemic stroke.<sup>1</sup> These compounds are commonly consumed through fruit intake because they are present in red and blue colored fruits and citrus fruits.<sup>1</sup> The protective effect that particular fruits have is attributed to the ability of the polyphenols to inhibit LDL oxidation, macrophage foam cell formation, atherosclerotic lesions and atherosclerosis.<sup>2,3</sup>

## POMEGRANATE JUICE SHOWN TO ASSIST IN REDUCING PLAQUE BUILDUP

Pomegranate has been admired in numerous civilizations throughout time as a health stimulating fruit with wondrous fertility and healthy life qualities.

Pomegranate polyphenols are powerful antioxidants that have been shown in numerous studies to protect LDL against oxidation via two pathways. When these antioxidants are abundant after

being consumed, they circulate in the blood and keep the fats from oxidizing. Since fat oxidation is one of the first steps in plaque formation, this helps keep the fats less “sticky” and less harmful to surrounding blood vessel components. If the fats are not oxidized and flow more freely it also reduces the response to send immune cells called macrophages to engulf oxidized LDL.<sup>2</sup>

## IMMUNE+++ PROVIDES MAXIMUM ANTIOXIDANT PROTECTION

Numerous studies indicate that consuming diets and supplements rich in specific antioxidants, such as those contained in components from Pomegranate, citrus, and red and blue berries, may help protect the blood vessels from the damaging buildup associated with clogging of the arteries and vessels of the heart and brain.



IMMUNE+++ contains an exclusive, powerful antioxidant formula fortified with Life-C blend, citrus bioflavonoids from fruits and Pomegranate extract, which includes everything you need for maximum antioxidant protection. The red berries, camu camu and acerola are rich in polyphenols found to protect fats from oxidation. When higher levels of powerful antioxidants are consumed regularly in the diet, they may help protect the fats from being oxidized in the arterial walls. This, in turn, helps shut down a series of events that leads to inflammation and plaque buildup. Take several IMMUNE+++ tablets daily to provide superior antioxidant protection for your optimal health.



These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

## REFERENCES

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