MARKET DEMAND

The Impact of Dry Bean Compounds on Cardiovascular Function

Red kidney beans improved cardiovascular function by lowering tension of the blood vessel wall. Twenty-one compounds were absorbed into the blood of those who ate a mixed bean diet, of which some are expected to be responsible for these health benefits.

PREVIOUS RESEARCH PROVED that consuming a half-cup of mixed pulses every day could improve blood flow to the legs of those with peripheral artery disease in only eight weeks. It was proposed that specific compounds absorbed from pulses are responsible for these benefits.

The objective of this research was to learn about these bean compounds and see if beans can positively affect blood vessel function immediately after consumption. In one experiment, blood vessel function was measured after healthy individuals ate four types of beans separately (navy, red kidney, black, pinto). A second experiment involved blood metabolomic analyses of individuals with peripheral artery disease who ate a mixture of all four bean types, compared to a rice control, for eight weeks.

The first experiment showed that eating red kidney beans produced the specific benefit of vasodilation or lowered tension of the blood vessel wall. This allows for improved blood flow, which over the long term will help protect against cardiovascular disease, including peripheral artery disease that affects the legs.

According to the second experiment, including beans in the diet changed the metabolic profile of the blood, which likely explains the health benefits derived from beans. It was also revealed that 21 compounds (of the 1,781 total found in beans) were detected in the blood of individuals who ate the mixed bean diet, some of which are expected to be responsible for the health benefits ascribed to beans.

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MPSG INVESTMENT $40,000

DURATION 2 years

MARKET DEMAND

Black and Navy Bean Effects on Blood Vessel Function

Black beans improved the elasticity of blood vessels in hypertensive rats. However, this health benefit was lost when black beans were removed from the diet for more than two weeks.

PREVIOUS RESEARCH HAS shown that consumption of dry beans leads to cardiovascular benefits, but it has been unclear which bean types contribute to this improvement. This study was designed to determine which bean type (black or navy) had the greatest potential for improving blood vessel function.

The impact of different diets containing beans was tested on hypertensive rats with elevated blood pressure and less elastic (stiff) arteries, compared to the healthy control rats. Diets of black beans, navy beans or no beans (control diet) were consumed for eight weeks. All animals were then placed on the control diet for another four weeks to see if the measured parameters returned to normal.

Blood vessel thickness, a major structural feature that is increased by high blood pressure, was reduced by the black bean diet. This means black bean consumption blocks structural changes to the blood vessels caused by high blood pressure. Navy beans may have had some effect on blood vessels, but they were not as potent as black beans.

The hypertensive rats that ate black beans daily for eight weeks also had greater blood vessel elasticity and this was maintained for two weeks after the beans were removed from the diet. But this protective effect was lost after four weeks without beans in the diet. This indicates that black beans are more potent, but their beneficial effects are eventually lost if they are not eaten regularly.

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MPSG INVESTMENT $10,000

CO-FUNDERS Agri-Food Research and Development Initiative

DURATION 2 years