Lycopene

AT A GLANCE

Introduction

Lycopene is a bright red carotenoid pigment, found in tomatoes and other red vegetables and fruits. The human body cannot produce lycopene and needs to obtain it from the diet.

Lycopene is the most predominant carotenoid in human blood, present naturally in greater amounts than beta-carotene and other dietary carotenoids. It accumulates in organs such as the skin, liver, lungs, and prostate.

In test tube studies, lycopene has shown to be a powerful antioxidant. Given its antioxidant properties, substantial research has been devoted to a possible correlation between lycopene consumption and general health.

Health Functions

A sufficient intake of lycopene as an antioxidant is important, as it helps the body to protect against the damaging effects of free radicals, potentially leading to diseases that involve the heart or blood vessels (cardiovascular diseases), and cancer.

Disease Risk Reduction

Cancer

A population study in male smokers indicated that dietary intakes of carotenoids including lycopene may result in a decreased risk of lung cancer. In addition, two meta-analyses of several prospective human studies showed that the highest versus lowest quantile of total carotenoid intake or highest versus the lowest serum lycopene concentrations were significantly associated with a reduced risk of lung cancer.

Several studies suggest that lycopene-rich diets are associated with a risk reduction of prostate cancer. It is not yet clear whether the observed effect is related to lycopene itself or other factors in lycopene-rich foods *.

Other diseases

Given its antioxidant properties, a lot of research has been devoted to a possible preventive function of lycopene in disorders potentially related to the damaging effects of free radicals (e.g., cardiovascular diseases and age-related eye diseases); some results were promising.

Estimates of lycopene consumption have been based on reported food (mainly tomato) intake, not on the use of lycopene supplements. Since tomatoes, for example, are also sources of other nutrients, including vitamin C, vitamin B9, and potassium, it is not clear that lycopene itself has beneficial effects *.

*see also Principles – The contradictory science of micronutrients

Intake Recommendations

No dietary intake recommendations have been established for lycopene.

Carotenoids such as lycopene are fat-soluble substances, and as such require the presence of dietary fat for proper absorption through the digestive tract.

Supply Situation

There are only very limited lycopene consumption data available.

Due to low consumption of fruits and vegetables, some people do not take in enough carotenoids such as lycopene.

Deficiency

There is no well-established definition of lycopene deficiency.

Sources

Lycopene is found in tomatoes and other red vegetables (e.g., red carrots) and fruits (e.g., watermelons and papayas – but not strawberries or cherries).

Lycopene can be absorbed more efficiently by the body after it has been processed into juice, sauce, paste, or ketchup.

Safety

No unhealthy effects have been reported for lycopene.

High intakes of lycopene-rich foods or supplements may result in a deep orange discoloration of the skin (lycopenodermia). The colour disappears when carotenoid consumption is reduced or stopped.

Drug interactions

There are no well-known drug interactions with lycopene.

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