

Lycopene in the prevention of prostate cancer.

Ref: J Soc Integr Oncol. 2008 Winter;6(1):29-36.

ABSTRACT

Based on the evidence from epidemiologic, animal, and in vitro data and human clinical trials, it is evident that lycopene, a non-provitamin A carotenoid, is a promising agent for prostate cancer chemoprevention. It is also clear that the form of lycopene used (purified versus food sources), dose of lycopene and concomitant use with other carotenoids and antioxidants, duration of exposure, specific target populations, and stage of disease appear to play a major role in determining agonistic or antagonistic effects. Based on our review, there is enough evidence to warrant use of lycopene in phase I and II clinical trials to examine its safety and efficacy as a potential chemopreventive agent for prostate cancer. The objective of this article is to review this evidence from epidemiologic, animal, in vitro, and clinical trials and provide the need and rationale to examine further the role of lycopene for prostate cancer prevention.

Intake of specific carotenoids and risk of lung cancer in 2 prospective US cohorts.

Ref - Am J Clin Nutr. 2000 Oct;72(4):990-7.

ABSTRACT

BACKGROUND:

Carotenoids may reduce lung carcinogenesis because of their antioxidant properties; however, few studies have examined the relation between intakes of individual carotenoids and lung cancer risk.

OBJECTIVE:

The aim of this study was to examine the relation between lung cancer risk and intakes of alpha-carotene, beta-carotene, lutein, lycopene, and beta-cryptoxanthin in 2 large cohorts.

DESIGN:

During a 10-y follow-up period, 275 new cases of lung cancer were diagnosed in 46924 men; during a 12-y follow-up period, 519 new cases were diagnosed in 77283 women. Carotenoid intakes were derived from the reported consumption of fruit and vegetables on food-frequency questionnaires administered at baseline and during follow-up. The data were analyzed separately for each cohort and the results were pooled to compute overall relative risks (RRs).

RESULTS: In the pooled analysis, alpha-carotene and lycopene intakes were significantly associated with a lower risk of lung cancer; the association with beta-carotene, lutein, and beta-cryptoxanthin intakes were inverse but not significant. Lung cancer risk was significantly lower in subjects who consumed a diet high in a variety of carotenoids (RR: 0.68; 95% CI: 0.49, 0.94 for highest compared with lowest total carotenoid score category). Inverse associations were strongest after a 4-8-y lag between dietary assessment and date of diagnosis. In subjects who never smoked, a 63% lower incidence of lung cancer was observed for the top compared with the bottom quintile of alpha-carotene intake (RR: 0.37; 95% CI: 0.18, 0.77).

CONCLUSION: Data from 2 cohort studies suggest that several carotenoids may reduce the risk of lung cancer.

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Index



Lycopene: Introduction

Lycopene: In Male Infertility

Lycopene: In Pregnancy

Lycopene: In Diabetes and CVD (Cardio-vascular disease)

Lycopene: In Eye disorders

Lycopene: In Prevention of certain types of cancer

Introduction

Lycopene is carotenoid pigment and phytonutrient, mostly found in tomatoes and other red fruits. It is one of the most potent carotenoid antioxidants. Lycopene is bright red in colour and might be responsible for the red colour of tomato.

Sources of Lycopene:

Tomato is a great source of Lycopene. The other sources include apricots, guava, watermelon, papaya, and pink grapefruit.

Lycopene in supplement form:

Lycopene can also be obtained in supplement form. Generally Lycopene is made available in the form of tablets or capsules, when it is sold as supplement.

Health Benefits of Lycopene:

Lycopene is considered to have various health benefits. Lycopene is a strong antioxidant and considered to be more potent than other carotenoids in the class. This attribute of lycopene helps cells to maintain strength and fluidity of their membranes; which ultimately prevents harmful substances (free radicals) from damaging cells.

Lycopene is also said to have uses in specific health conditions. Some of the prominent uses are as follows:

- Helps reduce ageing process of skin
- Beneficial in conditions like diabetes, osteoporosis
- Helps in treatment of male infertility
- Has a role in reducing the risk of preeclampsia & IUGR in pregnancy

(Ref- <http://www.fitday.com/fitness-articles/nutrition/healthy-eating/health-benefits-of-lycopene.html>)

"Increased lycopene levels have been associated with a decreased risk of various types of cancer and cardiovascular disease"

(Ref - J Am Coll Nutr April 2008 vol. 27 no. 2 267-273)

This newsletter is compilation of selected articles and studies done across the world on uses of Lycopene in different therapeutic areas.

Lycopene: In Male Infertility

Lycopene therapy in idiopathic male infertility--a preliminary report.

Ref: Int Urol Nephrol. 2002;34(3):369-72.

Abstract

Excessive generation of reactive oxygen species (ROS) containing free oxygen radicals has been identified as one of the causes of male infertility. Lycopene is a component of human redox defence mechanism against free radicals. It is found in high concentrations in the testes and seminal plasma and decreased levels have been demonstrated in men suffering from infertility. We evaluated the effect of oral lycopene therapy in men with idiopathic infertility. Beginning March 2000, thirty men with idiopathic non-obstructive oligo/astheno/teratozoospermia were enrolled for the trial. All patients were administered 2000 mcg of Lycopene, twice a day for three months. Semen analysis was performed at three months and sperm concentration, motility and morphology were evaluated. All patients completed the trial without any complications. Twenty patients (66%) showed an improvement in sperm concentration, sixteen (53%) had improved motility and fourteen (46%) showed improvement in sperm morphology. In cases showing an improvement, the median change in concentration was 22 million/ml, motility 25% and morphology 10%. The improvement in concentration and motility were statistically significant. Baseline sperm concentration less than 5 million/ml was associated with no significant improvement. Higher baseline concentrations were associated with significant improvement and resulted in six pregnancies in 26 patients (23%). Oral Lycopene therapy seems to have a role in the management of idiopathic male infertility. Maximum improvement seems to occur in the sperm concentration (66% cases). Patients without severe oligospermia (sperm density > 5 million/ml) may be given a trial of therapy with lycopene. However, larger randomized controlled trials are essential before definitive therapeutic guidelines can be made.

Lycopene: In Pregnancy

Pregnancy is very special experience for a woman. Research suggests that Lycopene could be very much useful in decreasing risk of some pregnancy associated dangerous conditions.

Lycopene is considered to be effective in reducing risk of Preeclampsia and IUGR (Intra-uterine Growth Retardation).

Following study strongly supports effectiveness of Lycopene in reducing incidences of preeclampsia and IUGR in primigravida women.

Effect of lycopene on pre-eclampsia and intra-uterine growth retardation in primigravidas

Ref - International Journal of Gynecology and Obstetrics 81 (2003) 257–262

ABSTRACT

OBJECTIVES:

To observe the effect of the antioxidant lycopene on the occurrence of pre-eclampsia and intrauterine growth retardation in primigravida women.

METHODS:

A total of 251 primigravida women were enrolled in this prospective, randomized controlled study in the second trimester. A total of 116 women were given oral lycopene (Group I) in a dose of 2 mg twice daily while 135 women were given a placebo (Group II) in the same dose until delivery. The criteria for recruitment included gestational age of 16–20 weeks, singleton pregnancy, absence of any medical complication and willingness on the part of the women to participate in the study. The women were followed-up until delivery for development of pre-eclampsia, mode of delivery and fetal outcome.

RESULTS:

The two groups were comparable in their maternal characteristics. Pre-eclampsia developed in significantly less women in the lycopene group than in the placebo group (8.6% vs. 17.7%, $P=0.043$ by chi-square test). Mean diastolic blood pressure was significantly higher in the placebo group (92.2±5.98 mmHg vs. 86.7±3.80 mmHg, $P=0.012$). Mean fetal weight was significantly higher in the lycopene group (2751.17±315.76 g vs. 2657±444.30 g, $P=0.049$). The incidence of intrauterine growth retardation was significantly lower in the lycopene group than in the placebo group (12% vs. 23.7%, $P=0.033$).

CONCLUSIONS:

The results of the present study suggest that the antioxidant lycopene reduces the development of pre-

eclampsia and intrauterine growth retardation in primigravida women.

Lycopene: In Diabetes and CVD (Cardio-vascular disease)

Lycopene with its antioxidant benefits also has beneficial effects in management of Diabetes and CVD. Following studies give better insights about use of lycopene in decreasing risk associated with Diabetes and CVD.

Serum lycopene levels in patients with diabetic retinopathy.

Ref: Eur J Ophthalmol. 2010 Jul-Aug;20(4):719-23.

ABSTRACT

PURPOSE:

Accumulating evidence indicates that oxidative stress may play an important role in the pathogenesis of type 2 diabetes and its complications. Lycopene, a very potent antioxidant of carotenoids, has received considerable scientific interest in recent years for its potential role in the prevention of oxidative stress-related chronic diseases. This study was undertaken to investigate whether the serum levels of lycopene are altered between type 2 diabetic patients with and without diabetic retinopathy.

METHODS:

A total of 71 patients with type 2 diabetes were analyzed and compared with 23 nondiabetic healthy controls. Serum lycopene concentrations were assayed using high-performance liquid chromatography.

RESULTS:

Lycopene level was found to be significantly lower in diabetic patients than in controls ($p = 0.021$). In the diabetic group, subjects with proliferative diabetic retinopathy had significantly lower lycopene levels than subjects without diabetic retinopathy or with nonproliferative diabetic retinopathy. In the analysis of correlations, hemoglobin A1c were negatively correlated with lycopene ($r = -0.345$, $p = 0.007$) after multivariate adjustment. A stepwise linear multiple regression model revealed that age and hemoglobin A1c were significant determinants of lycopene.

CONCLUSIONS:

Our findings show that measuring serum lycopene is a novel convenient method for evaluating oxidative damage. Diabetic patients, especially those with advanced diabetic retinopathy, had significantly lower serum lycopene levels; this suggests that lycopene may be helpful for the diagnosis, severity, and therapeutic evaluation of diabetic retinopathy.

Role of antioxidant lycopene in cancer and heart disease.

Ref - J Am Coll Nutr. 2000 Oct;19(5):563-9.

ABSTRACT

Lycopene, a carotenoid without provitamin-A activity, is present in many fruits and vegetables; however, tomatoes and processed tomato products constitute the major source of lycopene in North American diet. Among the carotenoids, lycopene is a major component found in the serum and other tissues. Dietary intakes of tomatoes and tomato products containing lycopene have been shown to be associated with decreased risk of chronic diseases such as cancer and cardiovascular diseases in several recent studies. Serum and tissue lycopene levels have also been inversely related with the chronic disease risk. Although the antioxidant properties of lycopene are thought to be primarily responsible for its beneficial properties, evidence is accumulating to suggest other mechanisms such as modulation of intercellular gap junction communication, hormonal and immune system and metabolic pathways may also be involved. This review summarizes the background information about lycopene and presents the most current knowledge with respect to its role in human health and disease.

Lycopene: In Eye disorders

Serum carotenoids and risk of age-related macular degeneration in a chinese population sample.

Ref: Invest Ophthalmol Vis Sci. 2011 Jun 17;52(7):4338-44. Print 2011 Jun.

PURPOSE:

It has been hypothesized that the macular carotenoids protect against age-related macular degeneration (AMD). In this study, the association between serum concentrations of carotenoids and the presence of AMD was evaluated in a case-control sample of elderly Chinese subjects.

METHODS:

Two hundred sixty-three individuals aged between 50 and 88 years enrolled in the study. Subjects included 82 cases with exudative AMD, 92 cases with early AMD, and 89 control individuals. Serum carotenoids (lutein, zeaxanthin, lycopene, α - and β -carotenes and cryptoxanthin) and retinol were measured with reversed-phase high-performance liquid chromatography (HPLC).

RESULTS:

Serum levels of carotenoids and retinol were significantly lower in the cases with exudative AMD than in the controls. Median levels of lutein and zeaxanthin were 0.538 and 0.101 M, respectively, in the control subjects,

and 0.488 and 0.076 M, respectively, in cases with exudative AMD. After adjustment for age, sex, smoking status, and body mass index (BMI), a significant inverse association was observed for exudative AMD with serum zeaxanthin (relative risk ratio [RRR], 0.04; 95% confidence interval [CI], 0-0.35), lycopene (RRR, 0.22; 95% CI, 0.1-0.48), and α -carotene (RRR, 0.24; 95% CI, 0.12-0.51). Early AMD was inversely associated only with lycopene (RRR, 0.49; 95% CI, 0.28-0.86) but was positively associated with carotene (RRR, 2.22; 95% CI, 1.37-3.58). No significant associations were observed between serum lutein and cases with early or exudative AMD.

CONCLUSIONS: The data suggest that higher levels of serum carotenoids, in particular zeaxanthin and lycopene, are associated with a lower likelihood of having exudative AMD. Serum levels of carotenoids were relatively higher in this Chinese cohort than in samples of other ethnicities in previous reports.

Lycopene: In Prevention of certain types of cancer

Preamble and Disclaimer: Cancer is the uncontrolled growth of abnormal cells in the body. There are many different types of cancers. Cancer can develop in almost any organ or tissue, such as the lung, colon, breast, skin, bones, or nerve tissue. There are many causes of cancer, including: Excessive sunlight exposure, Genetic problems, Radiation, certain carcinogens and many more...

However, the cause of many cancers remains unknown. Certain studies have suggested role of Lycopene in prevention of certain types of cancer; but there are no strong evidences to prove their role in prevention from certain types of cancer. So mentioned role of certain Lycopene in prevention of certain types of cancer is based on suggestive clinical studies. References for the same are clearly mentioned wherever necessary.

Lycopene can reduce risk of Cancer: Really?

'Early research in men with precancerous changes in their prostate shows that taking 4 mg of lycopene supplements twice daily might delay or prevent progression to prostate cancer. Some of these studies show that lycopene from foods, such as tomato products, is associated with a lower risk of developing prostate cancer. But other research shows no association between dietary lycopene intake and prostate cancer risk. However, for men in this study who had a family history of prostate cancer, getting more lycopene from food seemed to offer some protection against getting prostate cancer.

(Source- <http://www.webmd.com/vitamins-supplements/ingredientmono-554-Lycopene.aspx?activeIngredientId=554&activeIngredientName=Lycopene&source=1>)