

A LOW ANTIOXIDANT DIET WORSENS ASTHMA CONTROL

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Oxidative stress and impaired antioxidant defences are increasingly recognised features of asthma. Dietary antioxidants are an important component of host antioxidant defence. This study monitors changes in respiratory outcomes resulting from consumption of a low antioxidant diet, in subjects with asthma.

Methods: Subjects with asthma (n=15) were put onto a low antioxidant diet for 10 days. Medications were kept constant. Changes in respiratory status were monitored using spirometry and the Asthma Control Score. Changes in plasma levels of carotenoids (β -carotene, lycopene, α -carotene, β -cryptoxanthin, lutein/zeaxanthin) and tocopherols (α -, γ -, δ -tocopherol) were measured by HPLC using UV-visible detector.

Results: Changes in dietary intake resulted in decreased plasma antioxidant levels, in particular carotenoids, in the majority of subjects (11/15, 73%). Subjects who had a decrease in plasma lycopene levels also demonstrated a worsening of lung function and asthma control [see Table]. Changes in plasma lycopene levels were inversely associated with changes in exhaled nitric oxide ($r=-0.841$ and $p=0.018$) and positively associated with FEV₁/FVC% ($r=0.587$, $p=0.035$).

	Visit 1	Visit 2	p
Plasma lycopene (mg/L)*	0.40 (0.08-0.65)	0.18 (0.03-0.57)	0.004
%predicted FEV ₁	80.1 \pm 4.9	77.5 \pm 4.5	0.032
%predicted FVC	92.5 \pm 4.4	89.5 \pm 4.7	0.024
Asthma Control Score	0.8 \pm 0.2	1.4 \pm 0.2	0.020

* Data is Median (IQR); Data is Mean \pm SEM

Conclusion: A diet low in antioxidants worsens asthma control and lung function. Increasing dietary antioxidant consumption may alleviate asthma.

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