



Commentary

## Antioxidant therapy for COPD

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### Commentary

Oxygen is the main element for the living organisms as it is important and necessary for several metabolic functions. The species that are capable of existing independently with one or more unpaired electrons are called to be as free radicals and antioxidants are the substances that prevent the cell damage that is caused by the free radicals.

Mostly, in human diseases, COPD is one of the diseases, has caused due to oxidative stress. The Chronic Obstructive Pulmonary Disease (COPD) is one of the serious illnesses caused around the globe. This disease includes certain acute to chronic obstructions in the airways i.e., respiratory tract blockages like, chronic bronchitis etc. The other obstructions caused maybe due to the environmental exposures like cigarette smoking. The basic mechanism of COPD involved is occurrence of inflammation, oxidative stress and host genetics. Smoking serves the major risk for developing COPD in the people who are exposed to such environment.

### Oxidative stress due to smoking

Smoking produces a shift in the normal balance between oxidants and antioxidants to impact an oxidative stress both in the lungs and systemically. Oxidants included in cigarette smoke directly injure the cells and tissues, inactivate defense mechanisms, and initiate inflammation, which further elevates oxidative stress. It is difficult, if not impossible, to determine if the oxidants responsible for the stress are those originally included in cigarette smoke or those which result from the associated inflammatory response. Cigarette smoking is associated with lipid peroxidation and conversion of polyunsaturated fatty acids to hydro-peroxides, endo-peroxides, aldehydes and alkanes like ethane and pentane). Levels of these end products are increased in smokers, including thiobarbituric acid-reactive products (in sputum, blood, and lung components), isoprostanes (in blood, urine, and breath condensate), 4-hydroxy-2-nonenal adducts, and breathe alkanes.

Cigarette smoking depletes antioxidants and the concentrations of ascorbate, vitamin E are decreased among smokers, Smokers have lower serum

concentrations of ascorbate than do nonsmokers. These specific changes in ascorbate and vitamin E correspond to an elevated oxidative stress rather than a dietary intake. Cigarette smoke is also a source of reactive nitrogen species and causes nitrosative stress. Nitric oxide, abundant in cigarette smoke and generated by inflammatory cells, has potent antioxidant and anti-inflammatory actions, but also contributes to oxidative reactions.

COPD due to smoking frequently does not reverse or improve after smoking cessation, but rather can progress in ex-smokers. The reasons for persistence and progression of COPD despite cessation of the exposure are not fully appreciated. However, smoking cessation also does not eliminate the increased oxidative stress in the respiratory tract, suggesting that retained particles may continue to participate in oxidant generation.

### Antioxidant therapy

There is clinical adequacy of cell reinforcement treatment for COPD. Potential cancer prevention agent treatments and from numerous writing audits proposing that specific classes of cell reinforcements be assessed for the clinical value in COPD, including: thiol-intensifies like NAC, carbocysteine, Nrf2 activators like sulforaphane, cancer prevention agent nutrients like nutrient E and C), and food/diet-inferred polyphenols like curcumin and resveratrol. Some of these cell reinforcements have been assessed in rat as well as human investigations. For instance, in one investigation, carbocysteine, a thiol cancer prevention agent, was assessed for its effect on COPD compounding rate in a randomized, fake treatment controlled preliminary. Thiol cancer prevention agents show guarantee as one part of the COPD remedial "tool compartment", with their capacity to constrict worsening recurrence, which may conceivably assist with easing back infection movement.

### Conclusion

COPD is an unpredictable illness measure and no single treatment can treat the entire infection. Obviously, from the various researches, cancer prevention agent supplementation, dietary cell reinforcements, Chinese natural arrangements, needle therapy and TCQ may each have their place in COPD treatment, requiring the utilization of blend and reciprocal treatments.