

Cured Meat as a Potential Risk Factor of Chronic Obstructive Pulmonary Disease

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Commentary

Chronic Obstructive Pulmonary Disease (COPD) refers to a group of diseases that cause airflow blockage and breathing-related problems. It includes emphysema, chronic bronchitis, and in some cases asthma [1]. An estimated 64 million people have COPD worldwide in 2004 and more than 3 million people died in 2015, which is equal to 5% of all deaths globally [2]. The COPD prevalence rates for the individual countries range from 3.5% (Hong Kong and Singapore) to 6.7% (Vietnam) [3]. The primary cause of COPD is exposure to tobacco smoke (either active smoking or secondhand smoke) [4]. Other risk factors include exposure to indoor and outdoor air pollution and occupational dusts and fumes. Although cigarette smoking is the predominant risk factor for COPD, many smokers do not develop COPD [5]. Hence, relatively little attention has been paid to other modifiable factors, such as diet, and how they might affect COPD risk. Recent studies have suggested that interestingly processed or cured meat intake may adversely affect lung function and increase risk of developing COPD and some of the studies have also tested the hypothesis of curing as a risk factor for COPD [6]. Curing is the treatment of muscle meat with common table salt and sodium nitrite [7]. It is applied in the manufacture of sausages, beef, and poultry and fish products. In past, this technique was used for preservation and to extend the storage life of food, while now a days it is mainly used to achieve a pink- red color as well as a typical flavor in processed meat products [7].

High cured meat intake is a risk factor not only for cancer, but also for several chronic diseases and all-cause mortality [8]. The deleterious health effects of high cured meat intake have been increasingly observed [9]. Regarding lung health, frequent cured meat intake is associated with lung cancer, decreased lung function and COPD symptoms [10,11]. Cured meats have various compounds added to meat products as preservatives and color fixatives, among which the most significant are nitrites. Nitrites generate reactive nitrogen species that can increase inflammatory processes in the airways and lung parenchyma causing DNA damage, inhibition of mitochondrial respiration and nitrosative stress. The long-term persistence of nitrosative stress may contribute to the progressive worsening of pulmonary function and may be associated with the pathogenesis of COPD [12].

Cured meat itself is not the culprit but the nitrites found in it generate reactive nitrogen components which damages the lungs. For example, a study done on adult population of USA (NHANES) found that after adjusting for multiple risk factors, individuals who ate cured meat consumption 14 times/month or more had a significantly lower

FEV1 (-110 mL; p for trend<0.001) and FEV1/FVC (-2.13%; p for trend<0.001) compared with those who never ate cured meats [13]. They also found that each time /month increase in cured meat consumption was associated with a 3.85 mL decrease in FEV1 and FEV1/FVC [13]. Similarly, a prospective cohort study of health professionals (men) conducted in the USA also supported the same evidence that the consumption of cured meats was positively associated with the risk of newly diagnosed COPD (for highest vs. lower intake: relative risk=2.64. 95% (1.39-5.00; p-trend=0.002) [14]. The similar results were found in a similar study conducted in women [15]. In addition to this, one more study conducted among nurses of USA found a positive association between processed meat and COPD. The authors found a strong, statistically significant, dose-response relationship between the intake of processed meat and risk of incident COPD [6]. This finding was confirmed after adjustment for potential confounders, though the association decreased [6].

Likewise, two recent studies have tested the hypothesis that frequent consumption of cured meats increases the risk of COPD: a cross-sectional study of more than 7,000 men and women [15], and a longitudinal study of more than 71,000 women [14]. Both reported a positive association between the frequent consumption of cured meats and an increased risk of COPD [14,15]. Similarly, one more study conducted in France reported a positive direct effect of cured meat intake on worsening asthma symptoms [10].

Considering the above findings, it seems that most of these studies have been conducted in the developed countries to test the hypothesis of cured meat as a risk factor of COPD. Thus, while doing literature search, we found that no such studies have been conducted in the developing world. Moreover, As the time passes by, the eating patterns and life style is changing very rapidly in developing countries and consumption of fast food is at its peak now a days. Most of the people prefer to eat cured and smoked food items because of its delicious flavor and chronic busyness. In developing countries, prevalence of COPD and other respiratory diseases is also increasing day by day. Thus there is need to conduct such studies in developing countries to test this hypothesis of curing as a risk factor of COPD. The findings of such studies can be used to create awareness among the people about such food items and help the populations to prevent them from such chronic diseases.

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