

Abstracts of current literature

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Effects of air pollution on blood pressure: a population-based approach

Over the last 20 years, much research has been devoted to the effects of air pollution on our health. Many hypotheses have been proposed, but studies directly linking air pollution to blood pressure are rare. The authors of this article attempted to demonstrate such a link.

Presented is a retrospective analysis of data collected during the MONICA project, a project conducted by the World Health Organization to MONitor trends in CARDiovascular diseases in Augsburg, Germany. In this project, data were collected from 1984 through 1985 and from 1987 through 1988. In all, 4022 people were interviewed and examined between 1984 and 1985; 3753 of these people had follow-up examinations in 1987–1988. This current study analyzes data from 2607 of these individuals. Heart rate, blood pressure, and plasma viscosity were all measured on each of the patients. In addition, atmospheric levels of sulfur dioxide, carbon monoxide, and total suspended particulates were obtained.

Gaussian regression models were used to assess for an association between air pollution and systolic blood pressure. Although it was found that systolic blood pressure increased as air pollution worsened, confounding factors blurred the association. When the authors controlled for temperature, barometric pressure, and relative humidity, there was much less of a correlation. After controlling for the meteorological conditions mentioned, there was only a 1- to 2-mm Hg increase in systolic blood pressure attributable to increased levels of sulfur dioxide, carbon monoxide, and total suspended particles. The greatest factor seemed to be the number of total suspended particles on a given day. In individuals with a high plasma viscosity, increased numbers of total suspended particles caused an increase of approximately 7 mm Hg in the systolic blood pressure.

This study provides data that suggest a link between air pollution and increases in systolic blood pressure. It also implicates temperature, barometric pressure, and relative humidity as factors in blood pressure. What this study does not establish, however, is whether such slight changes in blood pressure are at all clinically significant. Also, the results of this study have intrinsically limited power secondary to the multifactorial nature of blood pressure. Long-term prospective trials are needed to further assess the effects of air pollution on blood pressure.

(*Am J Public Health*. 2001;91:571–577) A. Ibaldo-Mulli, J. Steiber, H. E. Wichmann, W. Koenig, and A. Peters.

APPLIED AND ENVIRONMENTAL MICROBIOLOGY

Experimental and field studies of *Escherichia coli* O157:H7 in white-tailed deer

As a result of recent outbreaks of *Escherichia coli* O157:H7, there has been a renewed interest in studying this bacterium. Much research has been focused on cattle, since beef is thought to be the primary source of *E coli* O157:H7, but there have been case reports implicating venison as a source for this disease as well. The authors of this study set out to evaluate the importance of white-tailed deer in the transmission of *E coli* O157:H7.

This study has 2 parts. A controlled laboratory experiment was performed to evaluate the clinical response, fecal shedding, sites of bacterial localization, and associated lesions in deer inoculated with *E coli* O157:H7. In the experiment, 6 deer were orally inoculated with *E coli* O157:H7, 2 deer were orally inoculated with nontoxigenic *E coli*, and 1 deer was not inoculated. The deer that was not inoculated was housed with 1 of the 6 deer that had been inoculated with *E coli* O157:H7. The other deer were also housed in pairs. The deer were then euthanatized and necropsied at various intervals. Serologic and histopathologic studies were performed subsequently. Meanwhile, field researchers collected multiple stool samples from wild deer and nearby cattle across the southeastern United States.

Other than 2 of the 9 experimental deer developing mild nonhemorrhagic diarrhea, there was no apparent clinical response after *E coli* inoculation. The 1 deer that was not inoculated did show fecal shedding of *E coli* O157:H7. It was also noted that fecal shedding decreased with time. Pathologic studies showed high levels of *E coli* in the gastrointestinal tract of all euthanatized deer, but not in the uncooked meat. Field studies found evidence of *E coli* O157:H7 in rectal swabs of 3 (0.5%) of 609 individually sampled deer, but there was no evidence of *E coli* O157:H7 in fecal samples collected from the ground. Evidence of *E coli* O157:H7 was also found in the stool of 13 (4.3%) of 305 nearby cattle. The specific serotypes are included in the results. Studies of fresh venison collected by hunters in the area failed to isolate any *E coli*.

This study provides valuable data concerning the role of wild deer in the epidemiology of *E coli* O157:H7. The experimental portion is small in size, but the results agree with results obtained in similar cattle studies. The field research, on the other hand, is extensive and large scale. Although no *E coli* O157:H7 was obtained from fresh venison meat, case reports of human infection after eating venison have been doc-