AIR POLLUTION PARTICULATE MATTER FROM COTTONWOOD AS A DEVELOPMENT FACTOR OF INFLAMMATORY BOWEL DISEASES

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UEG Week Copenhagen 2023 | Poster

IBD

October 15, 2023

Chronic oral exposure to particulate matter from cottonwood combustion impairs intestinal barrier integrity and promotes proinflammatory changes in a rat model of experimental colitis.

KEY POINTS

- Seven-day oral administration of cottonwood combustion particulate matter (PM_C) at 180 µg/100 g daily to rats reduced body weight gain by 10% and increased fecal water content by 7% compared to controls.
- PM_C-pretreated rats subjected to iodoacetamide-induced colitis showed decreased colonic mucus glycoproteins (from 185.00±19.28 to 85.67±23.37 units), increased myeloperoxidase activity (from 6.75±2.06 to 8.73±1.29), and elevated colonic vascular permeability (Evans blue extravasation 24.00±0.66 vs 18.80±1.79 µg/g wet colon).
- The authors conclude that long-term PM_C exposure violates intestinal barrier integrity, reduces mucus glycoproteins, increases endothelial permeability, and promotes proinflammatory changes that may facilitate development of experimental colitis.
- This experimental study in Wistar rats may be relevant to researchers investigating environmental risk factors for inflammatory bowel disease and intestinal barrier dysfunction.

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