UC Irvine

UC Irvine Previously Published Works

Title

BRONCHOALVEOLAR PERMEABILITY CHANGES IN RATS INHALING GAS PARTICLE COMBINATIONS DURING REST OR EXERCISE

Permalink

https://escholarship.org/uc/item/3cf3f70s

Journal

FEDERATION PROCEEDINGS, 45(3)

ISSN

0014-9446

Authors

BHALLA, DK
PHALEN, RF
MANNIX, RC
et al.

Publication Date

1986-03-01

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, availalbe at https://creativecommons.org/licenses/by/4.0/

Peer reviewed

eScholarship.org Powered by the California Digital Library
University of California

BRONCHOALVEOLAR PERMEABILITY CHANGES IN RATS INHALING GAS/PARTICLE COMBINATIONS DURING REST OR EXERCISE. D.K. Bhalla, R.F. Phalen, R.C. Mannix, S.M. Lavan & T.T. Crocker. Comm. & Environ. Medicine, Univ. of California, Irvine, CA 92717.

Bronchoalveolar (BA) injury in rats exposed at rest or exercise to air pollutants was studied by changes in epithelial permeability. Rats exposed to air, single gases or pollutant combinations were anesthetized, tracheostomized, and placed on an incline. ^{99m}Tc-DTPA was delivered directly to a major bronchus. Radioactivity measurements were made on blood samples collected during first 10 min. Exposure of resting rats to 0.6 ppm O_3 increased BA permeability just after exposure, but it was normal 24 hrs later; in exercising rats the increase was greater than in rats exposed at rest, and it persisted up to 24 hrs. NO_2 at 6 ppm did not affect permeability. Exposure of resting rats to 2.5 ppm NO_2 + 0.6 ppm O_3 only increased permeability right after the exposure, but in exercising rats this exposure resulted in a greater permeability which remained elevated up to 24 hrs. Exposure of exercising rats to 0.8 ppm O_3 + 10 ppm HCHO increased permeability. Exposure of resting rats to an atmosphere of 0.6 ppm O_3 + 2.5 ppm NO_2 + 5 ppm SO_2 + 1 mg/m^3 sulfates of ferric, ammonium and manganese also produced an increase in permeability that persisted up to 24 hrs. The results suggest potentiation of the pollutant effects by exercise, but there is no indication of synergistic effect of pollutant combinations on BA permeability. Supported by HEI #83-21-2; NIEHS #1 R01 ES03521-01 and EPRI #RP1962-1.