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[QJM](#). 2020 Dec 1;113(12):870-875. doi: 10.1093/qjmed/hcaa164.

# Hydrogen gas (XEN) inhalation ameliorates airway inflammation in asthma and COPD patients

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## Abstract

**Background:** Hydrogen was proven to have anti-oxidative and anti-inflammation effects to various diseases.

**Aim:** We wish to investigate the acute effects of inhaled hydrogen on airway inflammation in patients with asthma and chronic obstructive pulmonary disease (COPD).

**Design:** Prospective study.

**Methods:** In total, 2.4% hydrogen containing steam mixed gas (XEN) was inhaled once for 45 min in 10 patients with asthma and 10 patients with COPD. The levels of granulocyte-macrophage colony stimulating factor, interferon- $\gamma$ , interleukin-1 $\beta$  (IL-1 $\beta$ ), IL-2, IL-4, IL-6 and so on in peripheral blood and exhaled breath condensate (EBC) before and after 'XEN' inhalation were measured.

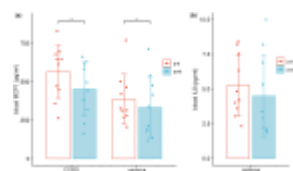
**Results:** 45 minutes 'XEN' inhalation once decreased monocyte chemotactic protein 1 level in both COPD (564.70-451.51 pg/mL,  $P = 0.019$ ) and asthma (386.39-332.76 pg/mL,  $P = 0.033$ ) group, while decreased IL-8 level only in asthma group (5.25-4.49 pg/mL,  $P = 0.023$ ). The level of EBC soluble cluster of differentiation-40 ligand in COPD group increased after inhalation (1.07-1.16 pg/mL,  $P = 0.031$ ), while IL-4 and IL-6 levels in EBC were significantly lower after inhalation in the COPD (0.80-0.64 pg/mL,  $P = 0.025$ ) and asthma (0.06-0.05 pg/mL,  $P = 0.007$ ) group, respectively.

**Conclusions:** A single inhalation of hydrogen for 45 min attenuated inflammatory status in airways in patients with asthma and COPD.

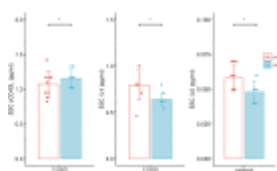
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## Figures



**Figure 1.** Blood cytokine levels before and...



**Figure 2.** Cytokine levels in EBC before...

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Wang M, Peng J, Hui J, Hou D, Li W, Yang J.

QJM. 2021 Feb 18;114(1):74-75. doi: 10.1093/qjmed/hcaa301.

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