

Hydrogen Water: removes fine particles from lungs and blood due to air pollution

KYK Hydrogen Water | 1,500 PPB of DH | KYK Co., Ltd. (South Korea)

Air pollution is associated with problems to human health as well as loss of quality of life. Air pollutants fall into two categories: gases (for example, O₃, NO₂, SO₂, CO, and so on) and



particulate matters (PM), with different grain sizes and chemical composition. These pollutants have been linked to adverse health effects even in low concentrations, especially PM, the most responsible for health problems related to the respiratory system. The rapid industrialization of the earth has been inducing desertification and environmental pollution, and thereby increasing exposure of humans and wildlife population to a lot of fine particles such as industrial particulates and sands. The fine particle exposure is one of the major burdens of disease attributable to 20 leading risk factors. The harmful effect to human health caused by PM depends both on its concentration in the inhaled air and on its granulometry, and chemical composition.

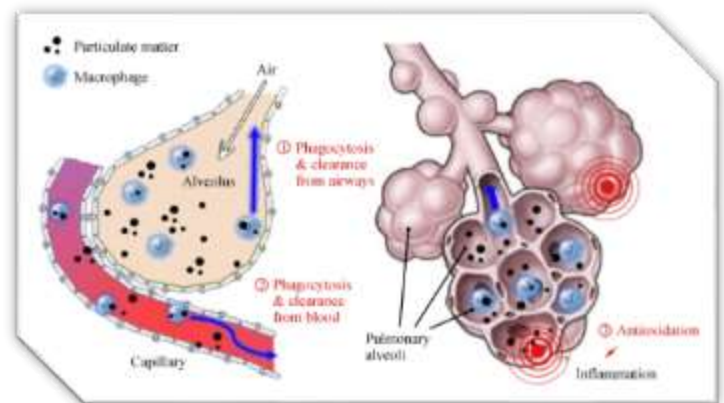
PM exposure triggers a variety of maladaptive signaling pathways in the lungs, blood vessels, liver, and brain that are associated with endoplasmic reticulum (ER) stress, oxidative stress, and inflammatory responses. Oxidative stress arises from the strong cellular oxidizing potential of excess reactive oxygen species (ROS), or free radicals. The ROS, generated via diverse physiologic and pathological activities, is converted to highly toxic hydroxyl group ($\cdot\text{OH}$) or detoxified



by oxidizing and antioxidant enzymes, respectively. High concentration of $\cdot\text{OH}$ is produced via Fenton reaction mediated by transition metal ions such as Fe^{2+} and Cu^{2+} .

Molecular hydrogen (dihydrogen, H_2) has been suggested that it acts as a therapeutic antioxidant by selectively reducing cytotoxic oxygen radicals. Indeed, hydrogen water has been reported to improve various diseases and tissue injuries through anti-oxidative and anti-inflammatory activities including pulmonary inflammation and asthma, cerebral infarction (stroke), Alzheimer disease, Parkinson disease, rheumatoid arthritis (RA), and diabetes. In addition to tissue-protective effects, hydrogen water attenuated the brain inflammation induced by particulate matters. Such multifaceted beneficial effects of hydrogen water led us to investigate its effectiveness on the fine particle burden in the lungs and blood, and underlying mechanisms.

In conclusion, Hydrogen water not only effectively eliminated both the ultrafine and fine particles from the lungs and blood by enhancing phagocytic activity, but also attenuated the lung tissue injuries by inhibiting lipid peroxidation. Such multifaceted activities of HW on the PM elimination and tissue protection was summarized in Fig. 1, suggesting enhanced phagocytosis and elimination from the airways (①) and blood (②) and anti-inflammation via anti-oxidative potential (③). The results indicate that that a long-term intake of hydrogen water might be beneficial for the reduction of bodily burden of PM.



Call Now: 1800-102-0908

Website: <http://www.kykindia.com>