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Molecular hydrogen is a promising therapeutic agent for pulmonary diseases

Key words: Molecular hydrogen; Pulmonary diseases; Reactive oxygen species (ROS); Oxidative stress; Inflammation

Research Summary

This review mainly focused on biological functions and cellular processes of molecular hydrogen. We then describe the status of research on its contributions to various lung diseases. The biological functions and treatment spectrum in lung are summarized in the following aspects:

biological functions	Anti-oxidation Anti-inflammatory effects Regulation of autophagy Regulation of apoptosis and pyroptosis Regulation of aging	 Sepsis induced ALI LPS induced ALI
treatment spectrum	 Acute lung injury COPD Asthma Lung cancer Pulmonary hypertension Pumary fibrosis 	 severe acute respiratory syndrome coronavirus 2 ischemia/reperfusion Other types

Innovation points

- Introduction of mechanism of molecular hydrogen and its effects on biological functions and cellular processes
- Summary of the most updated research progress about hydrogen in the therapy of lung diseases

Innovation points

Two figures were generated to summarize the latest knowledge about hydrogen therapy

Figure 1 illustrates the possible biological effects of hydrogen

Figure 2 illustrates the effects of hydrogen on various lung diseases

Figure 2a Hydrogen has protective and therapeutic effects on various lung diseases

Figure 2b Effects of hydrogen on ALI