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A nutritional supplement formula for influenza A (H5N1) infection in humans.

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Abstract

By early February 2006, the World Health Organization had reported 165 human cases of H5N1 influenza since December 2003, with 88 fatalities. However, the avian H5N1 influenza virus apparently is not yet efficiently transmitted between humans. Though a near-term possibility of a global H5N1 influenza pandemic remains, currently there is no vaccine or anti-viral drug that is proven to be safe and effective in preventing or treating H5N1 influenza in humans. There is thus a compelling public interest in developing alternative prophylaxis and treatment strategies for H5N1 influenza, which would need to address the complex pathogenesis of H5N1 influenza that is responsible for its apparently unusually high virulence. The authors present here a significant body of medical and scientific evidence to support the prophylactic use of a carefully designed nutritional supplement formulation that may antagonize the major pathogenic processes of H5N1 influenza in humans. Through several independently-mediated mechanisms, the formulations may: (a) degrade H5N1 virulence by directly affecting the virus itself, (b) inhibit H5N1 viral replication by maintaining cellular redox equilibrium in host cells, (c) inhibit H5N1 replication by a blockade of the nuclear-cytoplasmic translocation of the viral ribonucleoproteins and reduced expression of late viral proteins related to the inhibition of protein kinase C activity and its dependent pathways, (d) down-regulate activation and proliferation of proinflammatory cytokines in respiratory epithelial cells and macrophages that are implicated in the pathogenesis of H5N1 influenza, and (e) protect the lungs and other vital organs from virus- and cytokine-induced oxidative stress by supplying and maintaining sufficient levels of exogenous and endogenous antioxidants. Key mediators in these processes include selenium, vitamin E, NAC/glutathione, resveratrol, and quercetin. Taken prophylactically, and throughout the duration and recovery of an H5N1 infection, the nutritional supplement formula may aid humans infected with H5N1 influenza to survive with a reduced likelihood of major complications, and may provide a relatively low-cost strategy for individuals as well as government, public-health, medical, health-insurance, and corporate organizations to prepare more prudently for an H5N1 pandemic. Some evidence also indicates that the supplement formulation may be effective as an adjunctive to H5N1 vaccine and anti-viral treatments, and should be tested as such.

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