Humic and fulvic acids

The Natural-product humate(s) (Humic Acid) were found to be quite effective against all three influenza viruses."
National Institutes of Allergy and Infectious Diseases (NIAID) under the auspices of the National Institutes of Health, August 2001 - January 2002

"As shown, the (Humic Acids) exhibited substantial efficacy against both hemorrhagic fever viruses….natural-product HA (Humic Acid) particularly so against Punta Toro A virus."
National Institutes of Allergy and Infectious Diseases (NIAID), under the auspices of the National Institutes of Health, August 2001 - January 2002

"It is therefore concluded that it is possible to test the anti-viral effects of all four (Humic Acid) compounds up to 500 ug/mL without any drug-related cytotoxicity." “Furthermore, three series of experiments were designed to explore the potential mechanisms of action. The first series of experiments demonstrated that all four compounds (of Humic Acid) can inactivate both herpes simplex virus 1 and herpes simplex virus 2 infections with different anti-viral activities. The second series of experiments demonstrated that the compounds (of Humic Acid) can protect cells against herpes simplex virus 1 and herpes simplex virus 2 infection.
The third series of experiments demonstrated that the compounds (of Humic Acid) can interfere with the proliferation of herpes simplex virus 1 and herpes simplex virus 2 after the virus enters the cells."

Meeta Patnaik, M.D., Senior Research Scientist
Hun-Chi Lin, PhD, Director, Clinical Trials
Specialty Laboratories, Santa Monica, CA, August 1998

"Humic Acid inhibits the in-vitro replication of influenza virus A/WSN/33 (H1N1) in Madin-Darby canine kidney (MDCK) cells at concentrations of no cytotoxicity. The IC50 for Humic Acid was 48.61 +/- 7.32 microg/ml and 55.27 +/- 5.46 microg/ml respectively when the compound was added at the stage of viral adsorption or post-adsorption. Humic acid inhibits the endonuclease activity of viral RNA polymerase."
Lu FJ, Tseng SN, Li ML, Shih SR.
Department of Biochemistry, College of Medicine, National Taiwan University, Taipei.

"For each sample, three concentrations of test article (Humic Acid) were prepared… and each injected into the tail veins of 10 Swiss Webster mice… at dose levels of 50 mg/kg of body weight, 25 mg/kg, and 12.5 mg/kg… the mice were examined for symptoms of toxicity for 14 days. All animals survived the test, and in my opinion, the clinical observations made were not indicative of toxicity."
Richard Schlesinger, Ph.D., D.A.B.F.T.
BioScreen Testing Services, Inc., Torrance, CA, August 1998

"All (Humic Acids) evaluated were not cytotoxic at levels at least as high as 100 mg/mL..."
National Institutes of Allergy and Infectious Diseases (NIAID), under the auspices of the National Institutes of Health, August 2001 - January 2002
"...the ability to inhibit the replication of wild-type strains (of HIV-1) is an obvious (and, arguably, the most important) prerequisite in order that any HIV-1 drug be considered useful. The results obtained to date have shown that (natural) Humic Acid as well as synthetic humic acid(s) do, in fact, inhibit the replication of HIV-1 wild-type strains, in addition to assaulting in a unique way the intracellular replicative events of the virus." "It was found in this work that both synthetic as well as naturally-occurring humic substances extracted from soil are in fact capable of inhibiting HIV-1 replication."

Research team at USC School of Medicine, January, 1998.

"The Humates are potent inhibitors of acute HIV infection in antiviral evaluation models. The present studies point to an antiviral target occurring before proviral integration, possibly involving virus attachment and entry." "We were able to confirm antiviral activity for the humates and define their potential antiviral target to the pre-integration phase of HIV replication, providing preliminary data that a portion of the antiviral activity is due to inhibition of virus attachment."

Jim A. Turpin Ph.D., Manager Retrovirus Research Laboratory
Tracy Loftus, Supervisor Retrovirus Research Laboratory
Southern Research Institute, September, 2000

"(Humic Acid) inhibited HIV-1 infection of MT-2 cells with an IC(50) of 12.5 microg/ml. Treatment of free and cell-attached HIV with (Humic Acid) irreversibly reduced infectivity, while the susceptibility of target cells to the virus was not impaired by treatment prior to infection. The infectivity of the HIV particles was inhibited by interference with CD4 binding and the V3 loop-mediated step of virus entry. No viral resistance to (Humic Acid) developed over a 12-week period in vitro. (Humic Acid) therefore holds promise for the treatment of HIV-infected patients."

van Rensburg CE, Department of Pharmacology, University of Pretoria, Pretoria, South Africa; Dekker J, Enerkom (Pty) Ltd, Pretoria, South Africa; Weis R, Smith TL, Janse van Rensburg E, Schneider J.

"Humic acids are natural constituents of soil and ground water and mainly consist of mixtures of polycyclic phenolic compounds. (Humic Acid) inhibited HIV-1 infection of MT-2 cells with an IC50 of 50-300 ng/ml. Inhibition of HIV-induced syncytium formation was observed at 10-50 micrograms/ml. Treatment of free and cell-attached HIV with (Humic Acid) irreversibly reduced its infectivity. (Humic Acid) interfered with the CD4-induced proteolytic cleavage of the V3 loop of virion gp120SU. Furthermore, binding of V3 loop-specific antibodies was irreversibly inhibited, whereas binding of soluble CD4 to gp120SU on virus and infected cells was not affected. In conclusion, our data suggest, that the (Humic Acid) inhibits the infectivity of HIV particles by interference with a V3 loop-mediated step of virus entry."

Schneider J, Weis R, Manner C, Kary B, Werner A, Seubert BJ, Riede UN.
Abteilung Virologie, Institut fur Medizinische Mikrobiologie und Hygiene der Universitat, Freiburg, Germany.

Other studies found that humic and fulvic acids:

1) increase the body's intake of calcium and magnesium (alkalizing minerals) by 50%, sodium and potassium by 16%, and manganese, iron, and zinc by 80%,

2) help the liver metabolize the simple sugars leucine and uridine into adenosine triphosphate (ATP, the nucleotide commonly regarded in biochemistry as the “molecular currency” of intracellular energy transfer), and
3) combine with molecules that carry oxygen in your blood, which increases ATP and cellular energy. (Most diseases abhor oxygenated, aerobic environments.)

There’s also a story about a region in the Himalayas where, for thousands of years, it was commonly known that old monkeys didn’t live at the tops of the mountains. Balding, gray ones were seen only at lower altitudes. The locals believed high-altitude monkeys died at a younger age because it’s so hard to survive in rocky, barren landscapes where weather conditions are severe and food is scarce.

But in the 1930s, a doctor kept track of the ages of the monkeys who lived at different altitudes, and he discovered something else. The ones up higher weren’t dying at younger ages. They lived just as long as the ones below. But the monkeys at higher altitudes had a different diet. They were eating something that trickled out of the mountain bedrock. The doctor figured out what was happening. Moisture absorbed into bedrock froze in the winter. In the spring and summer, when the frozen moisture melted, it seeped through the pores and cracks of the rock, full of usable minerals from the earth. What the monkeys were eating was pure, pristine humate.

Some References

5. Induction of oxidative stress by humic acid through increasing intracellular iron; a possible mechanism leading to atherothrombotic vascular disorder in blackfoot disease. Gau, R. J.; Yang, H. L.; Suen, J. L.; Lu, F. J. Biochem Biophys Res Commun, 2001; Vol 283; Issue 4; Pages 743-749.


