

BROAD SPECTRUM ANITVIRAL EFFECTIVENESS OF NATURAL AND SYNTHETIC HUMATES.

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Preface:

This report presents the results of toxicology, cell proliferation, and efficacy testing work carried out on natural and synthetic humic acids by contract laboratories of the Virology Branch of the Antiviral Research and Anti-microbial Program, Division of Microbiology and Infectious Diseases, National Institutes of Allergy and Infectious Diseases under the auspices of the National Institutes of Health (NIH). Dr. Christopher Tseng, Program Officer, performed the Laboratory work at the NIH labs in Bethesda, Maryland, from August 2001 to January 2002.

Antiviral properties were examined on herpes, influenza, chicken pox/singles, mononucleosis, and hemorrhagic fevers (Ebola). Additionally, commonly used drugs for the respective diseases were tested for comparison.

Toxicity

Standard toxicity tests were run on both the natural and synthetic humates used in the tests. Both compounds evaluated were not toxic at levels at least as high as 100 ppm as indicated in the table below. The humate compounds were found to bind to cell surfaces, thereby changing their color but were in no way toxic to the cell.

Table 1
Toxicity

	TC50 ppm		
	Monkey Kidney	Human Foreskin	Dog Kidney
Synthetic Humate	>100	>100	>100
Natural Humate	>100	>100	>100

Cell Growth Effects

Testing was done on both compounds to see if any effect was observed on normal cell growth of health tissues. Observations from the tests indicated no ill effect on cell growth or reproduction. Table 2 below indicated data observed

Table 2
Cell Proliferation

	Human Foreskin	CP50 ppm Burkett's lymphoma Cells
Synthetic Humate	71.2	>50
Natural Humate	88.4	>50

Antiviral Effects

Herpes and associated viruses

Herpes simplex virus types 1 and 2 are responsible for fever blisters and genital herpes, respectively. Approximately 45 million Americans are serum-positive for genital herpes (type 2). It is further believed that 80% of Americans are serum-positive for (type 1) with all exhibiting occasionally symptoms.

Human cytomegalovirus (HCMV), a virus that weakens the immune system, is present in 50% of the rural and 90% of the urban population of the US.

Varicella Zoster virus (Chicken Pox/Shingles) is present in most of the US population and is most generally contracted during the young years a Chicken Pox and returns later in life as Shingles.

Epstein-Barr virus (mononucleosis) is the cause of infectious mononucleosis and adolescents and young adults.

The common drugs of choice for these classifications of diseases are Acyclovir and Ganciclovir. Below are the test results for the effectiveness of humates against the virus along with preferred medications for comparison.

Table 3
Effectiveness of humates with herpes/associated viruses in ppm.

	Herpes Type 1	Herpes Type 2	HCMV	Chicken Pox Shingles	Mono
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Synthetic HA	6	6.2	28.2	>100	>0.4
Natural HA	4.7	2.5	32.2	53.5	>0.5
Acyclovir	1.6	1.3	NA	0.38	2.4
Ganciclovir	NA	NA	0.76	NA	NA

Influenza A and B viruses are routinely responsible for 20,000 to 30,000 deaths annually in the U.S., and well over 100,000 hospitalizations. From time to time variations/mutations of the virus affect many people. The 1918 Spanish Flu caused approximately 500,000 deaths in the U.S., The 1957 Asian Flu 70,000 deaths and the 1968 Hong Kong flu 34,000.

The effect of natural and synthetic humates on differing types of flu virus are listed in Table 4 along with effectiveness of the most common drug Ribavirin. Additional testing on live animals indicated the humates possessed some prophylactic effects on the viruses.

Table 4

Effects on flu virus by humates by dosage in ppm

Flu Type Synthetic Humate Natural Humate
Ribavirin

New Caledonia	1	2.5	0.55
Panama	<1	<1	1.3
Type A (NWS/33)	1	1.3	6
Type A (PR/8/34)	8.5	14	9
Shangdong	6	15	3.2
Sydney	0.55	0.35	1
Beijing	<1	<1	1
Harbin	1.3	0.7	0.85
Hong Kong	23	3.2	1.8

Hemorrhagic Fever Viruses such as Ebola and Hanta Virus.

The two viruses examined from this classification were the Pichinde Virus from South America whose members are generally associated with rodent-transmitted disease in humans. Punta Toro Virus is also a South American virus normally transmitted by sand flies. Crimean-Congo, Rift Valley, Ebola and Hanta viruses are also members of this family.

The effectiveness of the humates with the hemorrhagic fever viruses examined in this work are provide in the following table along with the drug Ribavirin which is used many times in the treatment.

Testing also indicated that the humates taken before introduction of the virus exhibited strong prophylactic effects.

Table 5
Humate Effectiveness with Hemorrhagic Fever Viruses in ppm Dosages

	<u>Pichinde Virus</u>	<u>Punta Toro Virus</u>
Synthetic Humate	<1	5
Natural Humate	<1	5
Ribavirin	0.3	5

Conclusions

Humates are exhibiting effects, both as a preventative and a curative, for a broad range of viruses. Both the synthetic humate and well as the natural are demonstrating good effectiveness and in some case, exceeding the drugs of choice.

Natural humates are readily available, non-prescription, and inexpensive materials that have effectiveness on both animal and humans.

This paper is a summation. The text of the entire 43 page report can be obtained from www.laubbiochem.com. Go to the science section and 2001-2002 data. In this report natural humate (Terratol) is called Hepsyl HA. All other Hepsyl's are synthetic compounds.