



Press Release

HerbalScience Research Demonstrates that HIV Infection Is Inhibited by Elderberry, Cinnamon,...

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NAPLES, Fla., Aug. 20 /PRNewswire/ -- The development of new antiviral drugs has had a tremendous impact on the quality of life and life expectancy of HIV-positive and AIDS patients, as the drugs effectively disrupt the replication cycle of the HIV virus. Yet the regular use of those drugs - such as zidovudine (also known as azidothymidine or AZT), protease inhibitors, and highly active antiretroviral therapy (HAART) involving multidrug therapies - has led to resistant HIV strains. Recognizing the need for different therapies that target different steps in the infection process, scientists with HerbalScience have identified for the first time key chemical components in elderberry, cinnamon, and green tea extracts that bind to the HIV viruses and block them from infecting target cells in the laboratory.

An article detailing the research, titled "HIV type-1 entry inhibitors with a new mode of action," appears in the current issue of Antiviral Chemistry & Chemotherapy, a peer-reviewed scientific journal. The authors are affiliated with the University of Miami Leonard Miller School of Medicine, Miami, Florida, and HerbalScience Group LLC, a Naples, Florida, and Singapore-based company dedicated to applying advanced science and technology to the production of botanical drugs and nutraceuticals.

"HIV/AIDS is a global public health crisis, so these research results are promising for several reasons," said Randall S. Alberte, Ph.D., Chief Scientific Officer of HerbalScience and one of the authors of the published study. "First, they open the door to the possibility of developing alternative means to reduce viral loads in HIV infected individuals, as well as a less expensive means to provide alternative treatments to those who are unable or cannot afford to receive traditional drug therapies. In addition, such botanical materials may offer new sources of anti-HIV drugs that can address resistance generation and be complementary to current treatments."

Previous research by HerbalScience had demonstrated the ability of its proprietary elderberry extract to inhibit entry of the H1N1 influenza virus into target cells. For the HIV study, researchers used the same elderberry extract, and compared the antiviral activities to those of extracts obtained from green tea and cinnamon, two botanicals that are also known to be rich in flavonoids, plant nutrients that are beneficial to health. All the extracts were prepared using the company's patented extraction technologies, which standardize the chemical profile of any selected botanical in order to deliver a compositionally and functionally consistent product, batch to batch.

Using a direct binding assay with advanced DART (Direct Analysis in Real Time) Time-of-Flight mass spectrometry technology, the researchers were able to identify specific compounds in each of the three botanical extracts that bind to and block HIV infection in target cells. Among the hundreds of compounds present in the extracts, only two compounds were found to bind to the HIV virus particles. The research also determined the inhibitory concentration (IC50 and IC100) values of each extract; and additional analysis showed no toxic effect from the extracts even at concentrations well above the determined IC100 (100 percent inhibition) values.

Furthermore, the study examined the inhibitory interactions between the elderberry extract and enfuvirtide (also termed Fuzeon), among the first of a new class of HIV antiviral drugs called entry inhibitors, or drugs that disrupt the fusion of virus and target cells. Enfuvirtide is known to bind to a specific glycoprotein of the HIV virus required for viral fusion and infection. When enfuvirtide was combined with the elderberry extract, the inhibition of infection increased by nearly 6 orders of magnitude. That result indicates that the active antiviral chemistries in the elderberry extract bind to a different HIV glycoprotein than does enfuvirtide, demonstrating a significant synergistic effect on in vitro infection.

The article detailing the study is featured in the current issue of Antiviral Chemistry & Chemotherapy [19:6]. Its authors are Ryan C. Fink, Bill Roschek, Jr., and Randall S. Alberte, all of HerbalScience Group LLC. Dr. Fink is also affiliated with the Department of Biochemistry and Molecular Biology, University of Miami Leonard Miller School of Medicine, Miami, Florida.

HerbalScience is a privately-held life sciences company headquartered in Naples, Florida, with facilities in Singapore. HerbalScience is engaged in the discovery, development, manufacture, and marketing of proprietary botanical compounds for human health in the U.S. and international markets. The company has prominent alliances with prestigious university laboratories and prominent researchers in the U.S., as well as research institutions in China.

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