

## Scientists Discover How EBV Hides from the Immune System; The CBCD Reviews a Report

German scientists have discovered that the viral protein LMP2A helps EBVinfected cells hide from T cells (a type of immune system cell). (1)

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"Infected with the Epstein Barr Virus (EBV)? The Center for the Biology of Chronic Disease (CBCD), which tested the formula of <u>Gene-Eden-VIR</u> and <u>Novirin</u> in two post-marketing clinical studies, recommends taking this natural antiviral supplement." – Greg Bennett, CBCD

German scientists have discovered the method through which the Epstein-Barr virus (EBV) hides from the immune system. This is important because the EBV commonly causes viral infectious mononucleosis (the kissing disease), and has been linked to the development of many types of cancer. Dr. Andreas Moosmann said that "We suspected that a viral protein was behind EBV's camouflage in cancerous cells. Right away, LMP2A seemed quite suspicious to us. This protein keeps appearing in different forms of EBV infection, but it was never totally clear what it's doing there." (1) Dr. Moosmann is the head of the newly established research group "Host control of viral latency and reactivation" of the German Center of Infection Research. The scientists





discovered that "immune cells recognized infected cancer-like cells much better whenever the scientists knocked out LMP2A." (1) After infection EBV becomes latent … occasionally, the virus reactivates and enters the lytic (active) stage where it replicates and makes viral proteins on a larger scale.

The CDC notes that "Epstein-Barr Virus (EBV), also known as human herpesvirus 4, is a member of the herpes virus family. It is one of the most common human viruses. EBV is found all point in their lives." (2) The Center for the Biology of Chronic Disease (CBCD) recommends that in light of the medical evidence, infected individuals take Gene-Eden-VIR or Novirin. The formula of these natural, antiviral supplements was designed to help the immune system target the latent form of the Epstein-Barr virus.

Click to learn more about EBV symptoms.

The formula of Gene-Eden-VIR and Novirin was tested by Hanan Polansky and Edan Itzkovitz from the CBCD in two clinical studies that followed FDA guidelines. The studies showed that the Novirin formula is effective against the herpes family of viruses. The Epstein Barr Virus (EBV) is a member of the herpes family. The clinical studies were published in the peer reviewed, medical journal Pharmacology & Pharmacy, the first, in a special edition on Advances in Antiviral Drugs. Study authors wrote that, "individuals infected with the EBV ... reported a safe decrease in their symptoms following treatment with (the formula of Novirin)." (3) The study authors also wrote that, "We observed a statistically significant decrease in the severity, duration, and frequency of symptoms." (3)

Gene-Eden-VIR and Novirin can be ordered online on their respective websites, here:

## http://www.gene-eden-vir.com

and

## http://www.novirin.com

Gene-Eden-VIR and Novirin are natural antiviral dietary supplements. Their shared formula contains five natural ingredients: Selenium, Camellia Sinesis Extract, Quercetin, Cinnamomum Extract, and Licorice Extract. The first ingredient is a trace element, and the other four are plant extracts. Each ingredient and its dose was chosen through a scientific approach. Scientists at polyDNA, the company that invented and patented the formula, scanned thousands of scientific and medical papers published in various medical and scientific journals, and identified the safest and most effective natural ingredients against latent viruses. To date, Gene-Eden-VIR and Novirin are the only natural antiviral products on the market with published clinical studies that support their claims. Note: Novirin has the same formula as Gene-Eden-VIR. However, it contains higher quality and more expensive ingredients.

How does the EBV protein (LMP2A) help the virus to hide from T cells? "First, LMP2A reduced levels of several EBV proteins whose fragments are recognized by CD8+ T cells on the surface of the cell targeted for killing. Second, LMP2A disturbs expression of cellular molecules on infected B cells that interact with NKG2D, a host molecule on the surface of CD8+ T cells that aids their activation, thereby weakening the immune response against EBV-infected cells." (4) In simple terms, the LMP2A protein gives the EBV two very effective means of hiding from the immune system.

It is interesting that the scientists "infected human B cells with normal and LMP2A-deficient EBV. Because EBV transforms these cells, meaning that they can be changed to grow indefinitely, the researchers were able to examine so-called lymphoblastic cell lines (cancerous cell lines) that contained either virus. They found that LMP2A counteracts the recognition of EBV-infected B cells by EBV-specific immune lymphocytes called CD8+ killer T cells. In contrast, EBV-transformed cells without LMP2A are more efficiently identified, and the ability of these T cells to recognize and kill the EBV-infected B cells is enhanced." (4) In other words, when the LMP2A protein was removed from the EBV, the immune system's T cells were able to identify and then destroy cells infected with the virus.

What treatments are available for EBV infections?

"A few antiviral drugs are available that were shown to inhibit EBV replication in cell culture. These drugs include the acyclic nucleoside analogues aciclovir, ganciclovir, penciclovir, and their respective prodrugs valaciclovir, valganciclovir and famciclovir, the acyclic nucleotide analogues cidofovir and adefovir, and the pyrophosphate analogue foscarnet. However, clinical studies have shown that these drugs are mostly ineffective in humans." (3) There are also natural antiviral products that studies show to be safe and effective in reducing EBV symptoms. Two of these products are Novirin and Gene-Eden-VIR.

"We recommend that EBV infected individuals take Gene-Eden-VIR or Novirin. The formula of these natural antivirals was shown to reduce EBV symptoms in two separate post-marketing clinical studies that followed FDA guidelines." - Greg Bennett, CBCD

All orders of these products are completely confidential, and no information is shared or sold to any third party. Privacy is assured.

References:

(1) New-Medical.net - "Helmholtz Zentrum München scientists identify how Epstein-Barr virus conceals in human cells" Published on June 16, 2015. Helmholtz Zentrum München - German Research Center for Environmental Health

(2) CDC.com - About Epstein-Barr Virus (EBV). Last updated January 6, 2014.

(3) Polansky, H. Itzkovitz, E. Gene-Eden-VIR Is Antiviral: Results of a Post Marketing Clinical Study. Published in September 2013. <u>http://www.scirp.org/journal/PaperInformation.aspx?PaperID=36101</u>

(4) sciencenewsline.com - "A Viral Protein That Helps EBV-infected B Cells to Escape Human Killer T Cells" Published June 12, 2015, courtesy of PLOS

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