

BENEFITS OF PHOSPHATIDYL CHOLINE

A brief treatment (30 minutes) with lyso-phosphatidylcholine immediately induces a 3 fold higher beta-galactosidase activity in B-lymphocytes.

The enzymatic generation of Macrophage Activation Factor was mediated via enzyme-associated receptors.

Naraparaju, VR et al, "Roles of beta-galactosidase of B Lymphocytes and sialidase of T-Lymphocytes in inflammation primed activation of macrophages." *Immunol Lett.* 1994, Dec:43 (3): 143-5

NaGaLase

Nagalase, once the tumor grows to an appreciable size, has the capacity to be distributed systemically and thus has a generalized immuno-suppressive function in cancer patients. Of course other factors can also have an influence, such as DNA Adducts, phenotyping, gene expression etc.

Alpha-NaGaLase from tumors induces an immuno-suppressed state that eventually results in death by infection.

Yamamoto, N. et al, "Deglycosylation of serum vitamin D-binding protein and immuno-suppression in cancer patients." *Cancer Research.* 1996 56, 2827- 2831.

Endo-alpha-N-acetyl-galctosaminidase (NaGaLase) is produced by the probiotic bifidum bacterium in the colon. The NaGaLase produced in the intestine by our probiotics serves a role in breaking down mucin glycol-proteins in our food. Probiotic NaGaLase modulates bioactive peptides such as PAMP-12, bradykinin, peptide-T and MUC1a.

Ashida H et al, "Synthesis of mucin-type O-glycopeptides and oligosaccharides using transglycosylation and reverse hydrolysis activities of Bifidumbacterion endo-alpha-N-acetylgalactosaminidase." *Glycocon J.* 2009 June 27

In nature NaGaLase produced by bacteria, virus infected cells and fungi

Ashida H et al (as above)

Yamamoto N et al, "Pathogenic significance of alpha-N-acetyl-galactosaminidase activity found in the hemagglutinin of influenza virus." *Microbes Infect.* 2005, April; 7(4) 674-81.

Weignerova L et al, "Induction, purification and characterization of alpha-N-acetyl-galactosaminidase from *Aspergillus Niger*." *Appl. Microbiol. Biotechnol.* 2008 Jul; 79(5): 769 – 74

In Rickettsial disease the production of NaGaLase by Rickettsial organisms could be the critical factor which enables the bacterium to spread and cause malignancy, as it causes a systemic immuno-suppressed state.

In our gut the bifidum bacteria secrete a form of NaGaLase which shields them from the macrophages and immune attacks by our gut associated immune system, thus allowing the “friendly” bacteria and our immune system to live there in harmony. That’s a good expression of NaGaLase, because it’s about balance, but where there is cancer or AIDS, the immune system is out of control – results in uncontrolled cell growth!

Testing the NaGaLase burden is directly proportional to tumor-burden – Cancer treatments that are fully curative resulted in the reduction of NaGaLase activity to background levels within 2 – 3 days!

NaGaLase measurements could serve as a diagnostic and prognostic index in cancer and other dread diseases.

Korbelik M, et al, “The value of serum alpha-N-acetyl-galactosaminidase measurement for the assessment of tumor response to radio- and photodynamic therapy.” *Br. J Cancer.* 1998 Mar; 77(5): 1009 – 14

Normal background levels of NaGaLase: range between 0.38 - .63 nmole/min/mg protein.

People with diagnostically detectable tumors have levels of NaGaLase above 2.32 nmole/min/mg protein.

Yamamoto, N, et al, “Immunotherapy of metastatic breast cancer patients with Vitamin D-binding protein derived macrophage activating factor (GcMAF).” *Int. J. Cancer.* 2008 Jan 15; 122(2):561-7