Turtle Healing Band Clinic

"*Personalized Care for Optimal Health*"

Nagalase in Blood

A Test Used To Monitor Cancer and Certain Viral Infections

The Nagalase test measures the activity of an enzyme α-N-acetylgalactosaminidase (nagalase) in blood, an extracellular matrix-degrading enzyme that is secreted by cancerous cells in the process of tumor invasion. It is also an intrinsic component of the envelope protein of virions, such as HIV and the influenza virus, secreted from virus-infected cells[1,3,4].

Nagalase deglycosylates the vitamin D3-binding protein DBP (also known as Gc-protein). Gc-protein, which contains three sugars, is the precursor for the major macrophage-activating factor (MAF). By complete deglycosylation, Gc-protein can no longer be converted to MAF. Normally, MAF is produced from the Gc-protein by sequential removal of the galactose and sialic acid without touching the remaining sugar N-acetylgalactosamine. Macrophage activation for phagocytosis and antigen presentation is the first step in the immune development cascade. Lost precursor activity, therefore, leads to immune suppression.

Increased nagalase activity has been detected in the blood of patients with a wide variety of cancers like cancer of the prostate, breast, colon, lung, esophagus, stomach, liver, pancreas, kidney, bladder, testis, uterus, and ovary, mesothelioma, melanoma, fibrosarcoma, glioblastoma, neuroblastoma, and various leukemias[1,3,4]. For various types of tumors, various levels of nagalase activity were found[7]. It appears that the secretory capacity of individual tumor tissue varies among tumor types depending upon tumor size, staging, and the degree of malignancy or invasiveness[7]. Increased nagalase activity has not been detected in the blood of healthy individuals[1].

Nagalase activity is directly proportional to viable tumor burden[1,2]. Studies correlating nagalase levels with tumor burden suggest that the measurement of this enzyme can diagnose the presence of cancerous lesions below levels detectable by other diagnostic means[1]. In research studies, nagalase activity decreased to near tumor-free control levels one day after surgical removal of primary tumors from cancer patients, suggesting that the half-life of nagalase is less than 24 hours[1,6]. The short half-life of nagalase is valuable for prognosis of the disease during various therapies[1,5].

Test indications

Nagalase in blood is a sensitive test for monitoring the efficacy of therapy in cancer and certain viral infections, including HIV and recently HSV-1/2. Because of the short half-life of nagalase, the method is suitable for monitoring various types of therapy. The great sensitivity of the test may help the physician/oncologist in obtaining a better understanding of the therapy and to fine-tune the treatment. **NOTE:** The values may be affected by certain drugs used in the five days preceding blood draw. Drug use must be indicated on the Questionnaire submitted with the Requisition Form.

References

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