

# ORGANIC ACID TESTS WITH DUTCH - FAQs

## How does B6 lower xanthurenate?

Refer to the Kynurenine pathway slide. B6 is strongly needed to go from tryptophan down the Kynurenine pathway towards NAD. One step is highly B6 dependent. If there is insufficient B6, this step is blocked and there is a diversion to xanthurenate. Ironically, the step to make xanthurenate also needs B6, but it is significantly less B6 dependent compared to the step needed to make NAD. See this website for a picture of this pathway.

<http://lpi.oregonstate.edu/mic/vitamins/vitamin-B6>

## Do estrogen and cortisol push the Kynurenine pathway to greater than 95%, or the other pathway?

The Kynurenine pathway is already about 95% in favor of that direction from tryptophan. The estrogen, cortisol, etc. push it even more. If the patient is also B6 deficient, xanthurenate will increase when this happens. When tryptophan is pushed down this pathway, less is available in the brain to produce serotonin. This is part of the mechanism by which cortisol can cause depression.

## Does this depiction of organic acids (shown on slide 13) represent how neurotransmitters are formed?

This generic depiction of organic acids is reflective of the nutrient deficiency markers (like MMA) and not the neurotransmitter metabolites, which are end products of serotonin, dopamine and norepinephrine/epinephrine.

## Do neurotransmitter metabolites reflect what is going on in the brain?

The organic acids on the DUTCH test that fall in this category (neuro metabolites) are very useful markers, but are not always perfect reflections of brain chemistry. The brain makes its own serotonin and most of the body's serotonin is made in the gut. The 5HIAA in urine is a metabolite reflective of both. If there is a systemic decrease in serotonin, this is relevant; however, we must accept that while these markers give us a window into the world of neurotransmitters, they are not always perfectly reflective of brain chemistry. This is particularly true if there are issues metabolizing neurotransmitters. If, for example, dopamine is unable to convert to HVA (through the action of MAO and COMT enzymes), the actual levels of dopamine may be normal or high while HVA may be low. VMA is a useful marker of norepinephrine and epinephrine turnover. Most of these catecholamines are made in the adrenal medulla. There are some interesting connections between cortisol and the formation of adrenaline (cortisol is necessary for the conversion of norepinephrine to epinephrine) and VMA is a good reflection of the adrenal output of these catecholamines. These three markers are useful tools, but it is important to understand their limitations and always consider the clinical picture.

## What is the difference between the DUTCH Complete and DUTCH Plus?

The difference between the DUTCH Complete and the DUTCH Plus has to do with the cortisol and cortisone reporting and getting the cortisol awakening response with saliva for the DUTCH Plus kit. The DUTCH Complete is done only with dried urine and gives sex hormones metabolites, adrenals, 8-OHdG, melatonin and OATs, with a 4-point graph of cortisol and cortisone in urine. The DUTCH Plus offers all the same things for the dried urine, sex hormones metabolites, adrenals, 8-OHdG, melatonin and OATs. However, we give you the cortisol awakening response, from the saliva samples, on a 5-point graph. The patients collect the saliva at waking, 30 minutes after waking, 60 minutes after waking, evening and bedtime. This gives providers a chance to see exactly how fast their cortisol is responding at those exact time points in the morning. Then you should see a nice decline at the evening and bedtime hours. Here are links to both videos: <https://dutchtest.com/video/introduction/>

<https://dutchtest.com/video/introduction-to-dutch-plus/>

### **How long should a patient be off the birth control pill before completing their DUTCH Test?**

We would suggest patients be off birth-control for 2-3 cycles prior to testing. This is a general DUTCH recommendation. Birth control does not need to be discontinued to test the OATs.

### **Is there a practitioner training booklet that accompanies DUTCH reports? Are there more resources I can access to understand how to interpret and apply the information better?**

We have several tutorial videos on our website. [Here is a link](#) to the DUTCH Complete report, and there are several more reporting videos you can view at your leisure. These are great for walking-through and understanding the reporting. We offer clinical consultations with our DUTCH-expert physicians. These are 30-minute, pre-scheduled sessions and where our clinical support team goes over your patients' results with you. This is a complimentary benefit to all providers that have an account with us. A DUTCH training/education plan to help providers understand our testing and reporting is underway, but still in the works.

### **What about taking pregnenolone and DHEA sublinguals and taking the DUTCH test?**

Both pregnenolone and DHEA supplementation will affect the DUTCH Test. Pregnenolone does not raise progesterone itself but it does raise progesterone metabolites due to the first-pass effect. We recommend skipping oral or sublingual pregnenolone for 3 days and sublingual DHEA for one day.