

## INDICAN TESTS

### Indications of Urine Going Wrong

When the physiological mechanism is working perfectly, says Porter, the urine is free from indican (a substance formed from indole, which has its source in intestinal protein putrefaction). If the urine is free from indican there is no putrefaction in the intestine.

If there is over production of uric acid (a reddish yellow crystal-line acid, as obtained from urine), it may not be of any immediate significance. Unless the cause is found and corrected any excess may indicate grave structural changes in vital organs.

In testing for indican, it is necessary to understand the significance of the different shades of color obtained. In simple indicanuria, (showing the presence of indican without complications) the test reaction gives a clear indigo blue. When more or less toxic material is produced the color is a decided purple. Darker the color, the more serious is the toxemia (from putrefaction).

In the type of red indicanuria the indican is not precipitated, as in the case of the blue forms, but the result is very pronounced reddish coloration of the urine in the tube above the surface of the chloroform, while the latter remains colorless. Other color reactions are a greenish coloration of the chloroform, indicating the presence of bile.

When the assimilation is perfect the indican test invariably shows a sharp line of demarcation between the chloroform and the urine. If assimilation is impaired a more or less opaque disc forms at the junction of the urine and chloroform, varying in thickness from 1/8 to 1 inch. The location of the disc above or below the line has some significance.

Obermayer's test for indican, recommended by Green:

Put in a test tube 1 cubic centimeter Obermayer's reagent (15 drops) and an equal part urine to be tested, add 2 cubic centimeters of chloroform and thoroughly shake. A blue color will develop if indican be present.

None of the indications mentioned are in themselves of serious import. They are given as showing some of the early manifestations of imperfect assimilation, which, in the classes of cases we are considering, arise from improper diet and overeating.

The examination of the urine for uric acid (a significant end product of protein decomposition) and albumen, another protein product (frequently indicative of kidney inefficiency), should be entrusted to a physician who specializes in such examinations or to a physiological chemist. Traces of these substances may be present in the urine from natural causes and the presence of sugar, especially after a full meal, may also be sporadic and not indicative of diabetic changes already accomplished.

Urea, says Emerson, is the nitrogenous body of the urine present in the largest amount. The output of urea has been used as a test of digestion. A meal containing an excess of nitrogen may have included, for illustration, 500 grams of meat, 8 eggs and 200 grams of bread. During the same or the following day at least 50 grams of urea should be excreted. A normal person on an average diet is supposed to excrete 20 to 40 grams of urea each 24 hours. Why is there any great excess of urea at all in the urine? Urea is the chief nitrogenous ash of nitrogen food. Another opinion is that urea represents the excess of nitrogenous (animal food) in-take of our food. Still another, that some of the protein food broken down is not resynthesized or built up again into a form to be used by the body.

There is a simple and effective method of ascertaining if the kidneys are functioning properly. The density of urine, as shown by its specific gravity, is practically never the same in successive tests. This means that the more concentrated the fluid the higher a buoyant

object will float in it. A urinometer looks much like a thermometer without the frame. It is buoyant and weighted with quicksilver. The lower it sinks in a fluid the lower the specific gravity of the fluid as indicated by a scale on the stem of the instrument. If a urinometer is dropped into urine each time it is voided during the day and the specific gravity noted these notations at the end of the day should show marked variations. Such a result indicates that the kidneys are active and functioning properly. If, on the contrary, there is slight or no variation it indicates that the kidneys are exhibiting incapacity. With copious water drinking the color becomes light while the specific gravity may drop in health to as low as 2 (according to Starling) which means but 2 points denser than water, and is written 1.002 or in health, with heavy eating, it may rise to 1.015, or even to 1.040 on occasion. In a few diseases, such as some forms of Bright's disease, the milder form of diabetes (diabetes insipidus), dropsy and heart disease, low specific gravity is one of the persistent symptoms.

A limpid, light-colored urine in sufficient quantity and of natural color, indicative of health, free water drinking and moderate dietary habits, quickly gives way to a dense, dark colored, acidulous and ill-smelling fluid, as soon as the digestive organs are overloaded with such food as meat and eggs and denied an adequate supply of drinking water. Here is a plain danger sign that few notice and fewer still heed. Tested with the urinometer such urine registers a high specific gravity.

Apoplexy, aneurism (localized dilation of a weakened arterial wall) angina pectoris (breast pang), sudden death from failure of power in a fatty heart—all are the outcome of the blood being loaded with nitrogenous waste. If these protein poisons had been removed all the rest could have been avoided. The bulk of the urine in these cases is commonly small, dark in color, yet of high specific gravity, well charged with urates of sodium, ammonium, potassium, calcium and magnesium. An excess of uric acid in the urine is called lithuria. It is precipitated by cold as if it were brick dust. Usually, too, the patient gets up at night to pass water. Sometimes a large bulk of limpid, light-

colored urine alternates with this condition of scanty urine. In women especially there is breathlessness and palpitation in effort. Such a condition requires a sharply restricted diet involving a great deal of self-denial, but the result is worth all the pains. As to meat it should be confined to a little fowl or fish, plenty of vegetables and a mixed diet. This caution is particularly applicable where there is a tendency to a full habit or high blood pressure. The condition of the intestinal tract requires constant attention. A good drink in such circumstances is citrate of potassium as often as twice a day, well diluted.

### **Indican (Indoxyl Sulfate)**

- A urine test for diagnosis and monitoring intestinal or digestive problems

Indican originates from bacterial growth, often in the small intestine. Indican is an indole produced by bacterial action on an amino acid, Tryptophan, in the intestine. Most of indole is excreted in the feces. The remainder is absorbed and metabolized and excreted as indican in the urine.

In normal urine, the amount of indican excreted is small. It is increased with high protein diets or inefficient protein digestion. If not digested properly, or if the wrong types of proteins are ingested, bowel putrefaction can occur. Problems with protein digestion can be caused by overgrowth of anaerobic bacteria, intestinal obstruction, stomach cancer, low stomach acid, parasitic infections, malabsorptive syndromes (sprue, etc.), fungal infections, lack of digestive enzymes, or liver problems. In the rare condition, Hartnup disease, amino acids are poorly absorbed from the intestine. This allows bacterial decomposition to take place. The inability to digest protein can have adverse affects on glycemic control, hormone balance and water balance.

### **Urine Indican Test (Obermeyer test - Indoxyl Sulfate)**

Following absorption, indole is converted to 3-hydroxy indole (indoxyl potassium sulfate and indoxyl glucuronate, or indicans, in the liver.

Indole (oxidized)  $\square$  indoxyl + H<sub>2</sub>O<sub>2</sub>  $\square$  indoxyl sulfuric acid K + indoxyl potassium sulfate (indican)

Specimen requirements: No special patient preparation required. Minimum of 5.0 mL of urine required. If the assay is not run immediately, place sample in labeled plastic tube and freeze.

Detection of indican in the urine depends upon its decomposition and subsequent oxidation of indoxyl to indigo blue and its absorption into a chloroform layer. The resulting color is visually compared to a color chart and graded as follows:

Negative (Normal)	=	Clear or blue tinge
1+ (Normal)	=	Slight blue, yellow, mint green
2+ (Positive)	=	Dark blue, light green, golden brown
3+ (High Positive)	=	Violet, indigo, dark brown
4+ (Very High Positive)	=	Jet black

### **A Gateway Test for Functional Digestive Problems**

I use the Urine Indican or Bowel Toxicity test as a “gateway test” before ordering comprehensive digestive stool test panels and as a way to sleuth out a myriad of functional digestive complaints:

1. Bowel Toxemia
2. Dysbiosis
3. Hypochlorhydria
4. Protein and fat maldigestion
5. Malabsorption
6. High protein intake

Some Doctors uses it to measure for the presence of lectins in the system. The barometer they use is what is called the “Indican Scale”. Indican is produced by the kidneys from a product called indole, which is a toxic by-product of protein maldigestion. The protein lectins that is present in your digestive system, if you eat foods that are difficult to digest or eat foods high in lectins, will cause the level of urine indican to be high.

The urine indican test is an important test to run if you have patients following the “Blood Type Diet”. It can help your patients see the harmful effects of eating off their blood type diet. The level should normalize with either a therapeutic dose of betaine HCL or the strict following of their “Blood Type Diet”.

### **Some Background on the Indican Test**

A group of toxic phenolic compounds (indole, putricene, cadavorene and other putrefying gases) are produced from the putrification of partially digested food by an overgrowth of unfriendly anaerobic bacteria in the small and large intestine.

Indican is formed when anaerobic intestinal bacteria converts the amino acid Tryptophan into indole. The indole is absorbed into the blood stream and is converted into indican or 3-hydroxy indole in the liver, combined with potassium sulfate and glucuronic acid, then returned to the blood and excreted by the kidneys.

### **The presence of indican in the urine is a sign of the following:**

1. Putrification in the gut.
2. A lack of normal bowel flora (lactobacillus).
3. Excessive free oil consumption in a fat-intolerant person.

### **The testing uses the following reagents:**

1. Obermeyer’s reagent
2. Chloroform

### 3. Potassium chlorate

NOTE: Obermeyer's reagent is a strong acid that will cause burns. Wear safety goggles, rubber gloves and protective clothing.

#### **Latest Advancements in Interpreting Urine Indican Testing**

Most doctors are using the urine indican test are relying on the presence of different shades of blue to base their clinical interpretation. This seems to be quite subjective; A new method is a quantitative method of evaluating the sample.

By use of potassium chlorate, added drop by drop, to get a numerical result. Potassium chlorate slowly decolorizes the blue color out of the sample. Here is an idea of what the color change looks like:



The blue color indicates the presence of Indican



The blue color has been decolorized by potassium chlorate

#### **Results**

The following are the results you may see:

# of Drops	Result
0 - Normal	There should be no indican in the urine
1-3 Mild	Beginnings of mild dysbiosis and toxemia Possible functional hypochlorhydria
4 -7 Moderate	Functional hypochlorhydria, heavy dysbiosis and leaky gut syndrome are likely
7> Severe	Severe dysbiosis, leaky gut and malabsorption Run digestive stool analysis to further assess digestive function

## Conditions with Elevated Levels of Urinary Indican

Inflammatory bowel disease  
 Celiac disease  
 Hypochlorhydria  
 Gastric ulcer  
 Biliary and intestinal obstruction  
 Jejunal diverticulosis  
 Scleroderma  
 Postgastrectomy  
 Hartnup's disease  
 Pancreatic insufficiency  
 Diminished peristalsis  
 Blue diaper syndrome

A great way to maintain good gut bacteria is discussed in Cultured Cabbage Juice - Make the Best Lactobacteria

In the early part of the 20th century, doctors generally performed a test called a “urinary indican” during standard checkups to determine the presence of bacteria overgrowth. Indican is created when the essential amino acid tryptophan is fermented by bacteria in the bowel. More than a very small amount of indican is indicative of an overgrowth of unfriendly bacteria, which produce not only indican



but literally dozens of other substances that may be toxic to the cells of our bodies.

The indican test was usually done right in the doctor's office, as a part of a routine urinalysis that checked for all sorts of abnormalities. But by the latter decades of the century, mainstream medicine had almost entirely discarded the indican aspect of urinalyses—despite the fact that it is a very useful and inexpensive method of determining the presence of harmful bacteria. Today, the indican test is usually only performed by natural medicine doctors.

If an indican test is positive, the first step is to decrease intake of sugar and refined carbohydrates—substances that encourage the growth of many types of unfriendly bowel micro-organisms. (Of course, eliminating refined items from your diet entirely is better.) After that, make sure to eat more vegetables. Lastly, supplements of *Lactobacillus acidophilus*, *Lactobacillus bulgaricus*, and other friendly micro-organisms can help restore the normal balance of internal microflora in your body. The doctor who performs the urinary indican test for you will be able to offer you more specific information regarding treatment and dosage amounts of supplements. The test itself is easy, inexpensive, and one that everyone should have done.

The urine specimen, although one of the easiest obtained body fluids, is seldom used as an important diagnostic tool. The results of a complete urinalysis (even if abnormal) are usually only given a cursory glance by the attending physician, while an elevated serum enzyme test will cause the same physician's eyes to twinkle and the heart to race.

Some of the urine tests that should be ordered are:

1. 24-hour urine for pre and post chelation (macro, micro minerals and toxic metals)
2. Potassium/sodium ratio (dietary intake of these electrolytes).
3. Pyrroles (physiological and psychological stress).

4. Complete urinalysis (microscopic where applicable).
5. Urine vitamin C screen.
6. Urine indican

Indican (indoxyl sulfate) is produced by bacterial action on tryptophan in the intestine. Most is eliminated in the feces while the remainder is absorbed, detoxified and excreted as indican in the urine according to the following reaction:

Indole oxidized

Indoxyl + H<sub>2</sub>SO<sub>4</sub> → indoxyl sulfuric acid<sup>K+</sup> indican (indoxyl potassium sulfate)

In urine from a patient on a “normal omnivorous diet,” the amount of indican excreted is very small. Indican excretion is increased, however, in patients on a high protein diet. Increased amounts in disease results from putrefactive reactions and is increased with intestinal obstruction, gastric cancer, hypochlorhydria, biliary obstruction, and malabsorptive syndromes.

Detection of indican in the urine depends upon its decomposition and subsequent oxidation of indoxyl to indigo blue and its absorption by chloroform. The test requires a visual interpretation of a color formed in the chloroform layer. Results are graded as:

- Negative (clear or slight blue),
- + 1 (baby blue, mint green, yellow),
- + 2 (sea blue, grass green, golden brown),
- + 3 (indigo or deep blue, dark green, or dark brown)
- + 4 (jet black)

A negative or + 1 is normal, while +2 or higher are considered toxic and an indication of high levels of bowel putrefaction, problems with

intestinal integrity, absorption, protein catabolism or other conditions mentioned above. Some laboratories consider a +1 positive.

From a physiological and biochemical aspect, indican production, reabsorption and excretion are very similar to that of urobilinogen.

As mentioned previously, one diagnostic value of the urine indican test is in detecting food digestion problems (intestinal integrity, absorption, protein catabolism and bowel putrefaction).

If we considered +1 as positive, then a large percentage of those tested will be positive. The patients with a negative indican test can be positive for intestinal parasites and Candida overgrowth. Many of the patients with a +2 or higher were positive for intestinal parasites, Candida overgrowth, or evidence of protein catabolism problems (low plasma amino acids).

It is also interesting to note that of all the patients with a urine indican of +1 or greater, 50 percent have either a zero or low urine vitamin C. None of the patients with a negative urine indican had a low urine vitamin C.

It is believed that the urine specimen offers important diagnostic information, whether it is from a routine urinalysis, 24 hour urine for minerals, urine pyrroles, potassium/sodium ratio or urine vitamin C screen.