	Value	Reference value
Hemopyrrollactamcomplex	1,41	< 1 µMol/L
24 Hr. Volume	2900	1100 - 2100 ml
Total amount of HPL excreted	4,09	Up to 1.4 µmol/24 hr.

Explanation:
The HPU test measures the amount of haemopyrpollactam complex in the urine. The abbreviation corresponds to haemopyrrollactamuria. Patients with the metabolic disorder HPU excrete the haemopyrpollactam complex together with other pyrroles in the urine. HPU is a genetically determined disorder in the haem synthesis. The key focus is on a lack of the active form of vitamin B6 (pyridoxal-5-phosphate). This deficiency causes a double effect. On the one hand, it disrupts the biochemical processes in which vitamin B6 is involved, and the absorption of zinc, manganese and chromium is also greatly reduced. HPU is therefore defined as a lack of pyridoxal-5-phosphate that cannot be compensated for with food.

Interpretation of HPU-Test
Results from this test are divided into:

Value between	0.00 - 0.85	µMol/24 hours **HPU negative**
Value above	0.85	µMol/24 hours **HPU positive**

HPL was determined with the fulfillment of the GLP standard. If the result of the HPU urine test is more than 0.85 µmol/24 hours, treatment should be given.

Value impact
The concentration of HPL can be affected by chemical substances, but also by food. The highest concentration of HPL is mainly found after a hot meal. The following diseases can affect the result to a lesser extent: alcoholism, hyperthyroidism (increased activity from the thyroid gland) and active mononucleosis/kissing disease (infectious disease with swollen lymph glands), pernicious anemia, Bartter syndrome, cirrhosis of the liver, Crigler-Najar disease, Gilbert's disease, hepatitis, spherocytosis, malaria, sickle disease, shortly after a heart attack, psychological stress or shortly after an operation or accident.

HPU can be present with various symptoms:
People with HPU have greater fluctuations in blood sugar levels. When blood sugar levels are low, the adrenal glands are activated to produce adrenaline. The rise in blood sugar levels occurs through the breakdown of amino acids (the building blocks of proteins) into glucose. This reaction is due to reduced glycogen production. Enzymes involved in the build-up and breakdown of glycogen are stores for active vitamin B6 (pyridoxal-5-phosphate). Glycogen is mainly produced in the liver and muscles. There is an interaction between P5P and these enzymes. P5P stabilizes the enzymes and more glycogen is formed

Treatment recommendation

We provide some general guidelines below:

Good treatment is possible if the following recommendations are followed:

- limit your use of sugar and gluten.
- eat regularly during the day, divided into small amounts.
- get daily physical activity, but avoid overstraining.
- for higher values, avoid taking more than one gram (1000 mg) of ascorbic acid, ascorbyl palmitate is more recommendable.
- avoid acidified dairy products or products preserved with lactic acid, as the body can become acidified (too high acid formation).
- do not take any copper.
- take little/no PABA or beta-carotenes.
- take the following nutritional supplements: zinc, manganese and pyridoxal-5-phosphate or B6-phosphate (no vitamin B6 or pyridoxine (HCl)) which are available from various companies.