NEUROTRANSMITTERS – Extensive (urine)

The Neurotransmitter Profile is a urine test, assessing levels of six neurotransmitters: ***serotonin***, ***GABA***, ***dopamine***, ***noradrenaline***, ***adrenaline***, *and* ***glutamate****. These six neurotransmitters are the most researched in relation to their effects on mood disorders, hormones, sleep, glucose/insulin balance, pain perception, appetite, and cognitive function. The report format includes a correlation analysis section, written by the clinical department, which relates the patients' symptoms with their corresponding lab results, as an aide to the practitioner. Low or high levels of neurotransmitters are observed in various mental health disorders, such as depression, attention-deficit hyperactivity disorder (ADHD), Parkinson's disease and panic attacks.*

SYMPTOMS OF HIGH OR LOW NEUROTRANSMITTERS		
	HIGH	**LOW**
Serotonin	Headache, mental confusion Sweating, shivering Hypertension, tachycardia Nausea, vomiting Muscle twitching, tremor	Depression, low mood Hot flashes Sleep difficulties, anxiety Carbohydrate cravings Constipation
GABA	Anxiety Tingling of extremities Shortness of breath Throbbing heart	Anxiety / Depression / mood disorders Hyperactivity PMS Sleep issues
Dopamine	Developmental problems Schizophrenia Psychosis Possible increased Testosterone	Lack of motivation and focus Poor memory Addictions, cravings Low libido / decreased Testosterone Poor motor control / Tremors
Noradrenaline	Stress, anxiety Hyperactivity Increased blood pressure Pain	Lack of focus, energy or motivation Depression with apathy
Adrenaline	Insomnia Stress, anxiety Blood sugar imbalance, Insulin resist. Allergic reactions	Poor methylation Lack of focus Lack of energy Poor blood sugar control
Glutamate	Neurotoxicity Stress, anxiety Low mood Sleep disturbances	Fatigue Poor brain function Poor memory

Function of Serotonin

Serotonin (5-hydroxytryptamine) is an inhibitory neurotransmitter synthesised in serotonergic neurons in the central nervous system (CNS) and enterochromaffin cells of the gastrointestinal tract. In the CNS it is believed to play an important role as a neurotransmitter in the regulation of anger, appetite, body temperature, mood, sexuality and sleep. Low levels may be associated with aggression, anxiety, depression, eating disorders, impulsivity, irritability and sleep disorders.

Function of Dopamine, Noradrenaline and Adrenaline

Dopamine is an excitatory and inhibitory neurotransmitter synthesised in many areas of the brain. It is a precursor for noradrenaline and adrenaline. Dopamine also acts as a hormone when it is released from the hypothalamus, inhibiting prolactin production from the pituitary gland. In the CNS dopamine is involved in the regulation of pleasure and reward, memory, motor control, sleep, mood, attention and learning. Dopamine is released by rewarding experiences such as food, sex and (some) drugs. Lowered dopamine has been associated with loss of satisfaction, social withdrawal, apathy, reduced motivation and attention. In addition, low dopamine levels can result in impaired motor control, e.g. Parkinson's disease. High levels of dopamine may result in aggression, Schizophrenia, hyperactivity and Tourette's syndrome.

Noradrenaline (norepinephrine) and adrenaline (epinephrine) are excitatory neurotransmitters as well as hormones. They are produced by noradrenergic and adrenergic neurons respectively, as well as by the adrenal medulla. They are most well known for their involvement in the 'fight and flight' response, in which they increase heart rate, trigger the release of glucose from energy stores and increase blood flow to skeletal muscle. Low levels contribute to a decrease in mood, energy, focus, motivation and memory. High levels are associated with aggression, anxiety, emotional lability, hyperactivity, mania, stress and suppression of the immune system.

Function of GABA

GABA (gamma-aminobutyric acid) is an amino acid that functions as an inhibitory neurotransmitter in the brain. GABA is synthesised from glutamate, an excitatory neurotransmitter. In the body, GABA is concentrated in the hypothalamus region of the brain and is known to play a role in the overall functioning of the pituitary gland – which regulates growth hormone synthesis, sleep cycles, and body temperature.

Function of Glutamate

Glutamate is a major mediator of excitatory signals in the brain and is involved in most aspects of normal brain function including cognition, memory and learning.

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- Serotonin, GABA, Dopamine, Noradrenaline, Adrenaline, Glutamate