

Last Name, First Name: Patient, John

Gender: male

Date of birth: 01.01.1964

Received at lab.: 05.08.2016

ID number: 069113

Specimen collection: 05.08.2016

Date of result: 27.01.2017



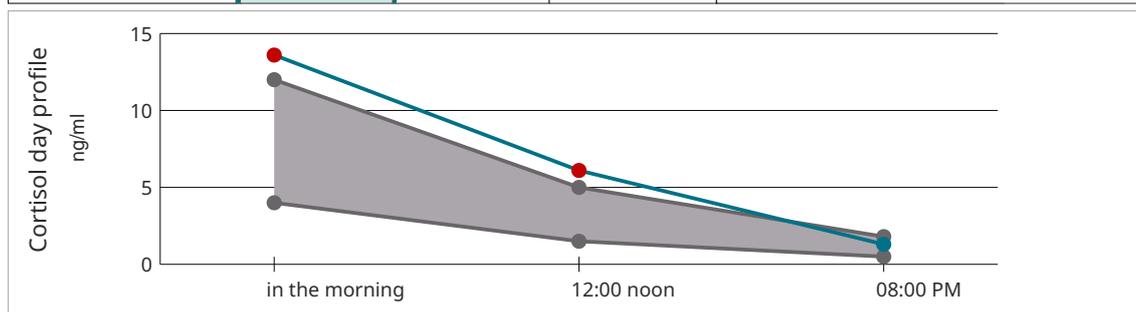
Praxis
Dr. M. Sample
General Practitioner
Medical Street 100
2345 Modeltown

0001001

RESULTS

▼ Result ■ Reference range ■ Outside of reference range

Tested parameter	RESULT	Reference range	Unit	Assessment	Preliminary finding
Serotonin	87	100 - 225	µg/g creatinine	diminished	not available
GABA	12.0	1,5 - 8,0	µmol/g creatinine	elevated	not available
Glutamate	17.5	8 - 30	µmol/g creatinine	normal	not available
Creatinine	39	-	mg/dl	Reference value	not available
Catecholamines					
Dopamine	278	125 - 250	µg/g creatinine	elevated	not available
Noradrenaline	71	25 - 55	µg/g creatinine	elevated	not available
Adrenaline	5.3	3 - 12	µg/g creatinine	normal	not available
NADR/ADR quot.	13.4	3 - 7	-	elevated	not available
Cortisol diurnal profile					
Cortisol	13.6	4,0 - 12,0	ng/ml	elevated	not available
Cortisol (12 noon)	6.1	1,5 - 5,0	ng/ml	elevated	not available
Cortisol (8 p.m.)	1.3	0,5 - 1,8	ng/ml	normal	not available
DHEA diurnal profile					
DHEA (morning)	391.0	86 - 488	pg/ml	normal	not available
DHEA (8 p.m.)	157.0	37 - 212	pg/ml	normal	not available



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OVERALL ASSESSMENT / OPINION ON MEDICAL HISTORY

Clinical information:

Illnesses: t.b.d. Symptoms: t.b.d. Medication: t.b.d.

The present results show a striking elevated noradrenalin/adrenalin quotient, which points to acute or beginning chronic stress. It is caused by a high noradrenalin level. This elevated level can cause anxiety symptoms, high blood pressure and hyperactivity.

Also, there is an increased dopamine concentration. During the first stage, dopamine has a stimulating effect, increases concentration, drive, motivation and cognitive capacities and is also responsible for the so-called flow experience. In the next stage, it leads to an inability to rest and regenerate, which in turn leads to daytime drowsiness and concentration issues and can cause digestive issues, sleep disorders, restlessness and psychological illness.

Elevated GABA levels can be seen as the body's counter-regulation regarding these high catecholamine concentrations.

Furthermore, serotonin levels stand out as borderline low, which - fully developed into deficiency symptoms - can lead to sleep disorders, eating disorders with weight gains, digestive disorders, listlessness, agitation and nervousness, lack of concentration, heightened sensitivity to pain, migraines, fibromyalgia, exhaustion, anxiety states and depression.

The diurnal cortisol curve furthermore displays relatively high cortisol levels in the morning and at noon. In the full presentation, elevated cortisol levels can lead to symptoms such as sleep disorders, jumpiness, metabolic disorders with excess weight, increased abdominal fat, elevated cholesterol levels, elevated blood pressure and susceptibility to infection.

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Further diagnostic approaches

Basically, the following differential diagnostic starting points arise in cases of a neurotransmitter imbalance:

Certain micronutrients and amino acids are indispensable cofactors for neurotransmitter synthesis. Likewise, stress often leads to gastrointestinal dysfunction. Thus, a neurotransmitter deficiency may be a result of nutrient absorption disorders. This is how intestinal health plays a central role in any stress and neurotransmitter imbalance therapy. Especially where intestinal issues are present in cases of reduced neurotransmitter levels, intestinal repair should be considered (see also: Therapeutic Orientation Aid, Intestinal Repair).

Inflammation is one of the most common causes for serotonin deficiency. In cases of inflammation, tryptophan, basic component for serotonin synthesis, is used predominantly for kynurenin synthesis. This means that less or too little of it remains for serotonin synthesis. Hence, the cause of inflammation should be examined in cases of serotonin deficiency. An IgG food allergy may be one cause of chronic inflammation.

Fructose and lactose intolerance are also associated with serotonin deficiency due to reduced tryptophan absorption.

Indication	Diagnostics	Medium	Parameters	Procedure
IgG food allergy / chronic inflammation	ImuPro Complete	Serum	specific IgG antibodies against foods	ELISA
Histamine intolerance	HIT	Serum	Diamine oxidase concentration	ELISA

The correlations depicted above are not tailored to any present results and apply generally. According to individual results as well as the patient's symptoms, it is at the discretion of the treating therapist to decide which of the options mentioned above may be the next advisable step.

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EXPLANATION OF PARAMETERS

Serotonin

Serotonin, also called the "happiness hormone", is an important messenger substance in the brain and is created in the central nervous system as well as in the intestinal mucosa. Serotonin is essentially responsible for our emotions. Acting together with adrenaline and dopamine, it elevates the mood and controls motivation. It also has a relaxing and sleep-enhancing and anti-depressive effect. In addition, it participates in regulating the feeling of satiety and sensitivity to pain. Essential functions of the intestine and the absorption of nutrients through the intestine are also affected by serotonin.

Initially, an intermediate substance, 5-hydroxytryptophan (5-HTP) is produced from the tryptophan amino acid. From this, serotonin is produced in a second step for which vitamin B6 is needed. From the serotonin, the "sleep hormone" melatonin is formed. Therefore, a serotonin deficiency can lead to a melatonin deficiency and therefore to severe difficulty sleeping.

The basic component for serotonin, tryptophan, is ingested with food. The following foodstuffs contain particularly high amounts of tryptophan: Soy beans and mung beans, peanuts, cashews, sunflower seeds, some types of cheese (e. g. Parmesan, Emmental, Edam, Brie, Camembert, Gruyère), eggs, meat, fish (in particular tuna, salmon, mackerel and trout), oatmeal and wheat germ.

Particularly high amounts of vitamin B6 are contained in the following foodstuffs: whole grain products, potatoes, bananas, legumes (e. g. soy beans, lentils), avocados, carrots, Brussels sprouts, sunflower seeds, walnuts, liver, meat and fish.

Your serotonin level is reduced

Serotonin deficiency

Serotonin deficiency is associated with difficulty sleeping, eating disorders with weight gain, dyspepsia, lack of drive, feelings of nervousness and worry, lack of concentration, increased sensitivity to pain, migraine, fibromyalgia, exhaustion, anxiety and depression.

Possible causes for serotonin deficiency can be, among others, chronic inflammation, viral infections, as well as reduced absorption of nutrients in the gut. It is therefore recommended that a check-up of the intestines be carried out subsequently in case of serotonin deficiency. A lactose or fructose malabsorption has also been linked to tryptophan deficiency and therefore serotonin deficiency. Generally, a lifestyle with a lot of stress, imbalanced nutrition and only little exercise can cause a disruption of the hormone and neurotransmitter balance and thereby a serotonin deficiency.

Creatinine

The creatinine measurement is a necessary reference value in the laboratory analysis of various parameters and is of no diagnostic significance in these findings. Inference of a potential dysfunction is not possible from this.

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GABA (gamma-amino butyric acid) and glutamate

GABA and glutamate are two very important messenger substances in the brain. The formation of both messenger substances is closely linked to one another and dependent on one another. They work as direct opponents and control, together, the activity level in the brain. Therefore, an optimal relationship of both neurotransmitters to each other is necessary for a well functioning interaction. The interaction with serotonin, which enhances the effects of GABA, is important, as well. Therefore, a serotonin deficiency can also limit the effectiveness of GABA.

Your GABA level is elevated

GABA (gamma-amino butyric acid)

Where stress is concerned, GABA plays a major role. It has a calming effect, since it influences the amount of the stress hormones.

GABA is very important for memory and learning. It prevents sensory overload, has an effect that is anxiety-resolving, relaxing, sleep-enhancing, pain-reducing, anti-spasmodic and it stabilises blood pressure.

GABA is produced from glutamate (c.f. glutamate) for which vitamin B6 is also needed.

Particularly high amounts of vitamin B6 are contained in the following foodstuffs: Whole grain products, potatoes, bananas, legumes (e. g. soy beans, lentils), avocados, carrots, Brussels sprouts, sunflower seeds, walnuts, liver, meat and fish.

Excess GABA

An elevated level of GABA occurs mostly as counter-regulator when excitatory neurotransmitters are activated in excess, as in case in an increase in stress. This is how the body attempts to balance the effects of the elevated stress hormones or to at least dampen them. As such, a normal catecholamines level at concomitantly elevated GABA may nevertheless point towards an increased stress load. The GABA level is elevated under anaesthesia or when taking sedatives.

Catecholamines (dopamine, noradrenaline, adrenaline)

In case of stress (any type of physical or psychological stress), catecholamines are released immediately as normal reaction of the body. For a short period of time, they enable the body to react to the increased demands posed by the stressors. The body is put into the so-called "fight-or-flight" mode. Thus attention is increased, blood pressure and pulse are elevated, the ability to react quickly and make snap decisions is increased. On the other hand, those bodily functions that are not absolutely necessary at the moment are being put on the back burner. Those include, among other things, the decision making, digestion, sexual activity, sleep and the like.

If the body can sufficiently recuperate thereafter, this is a perfectly healthy way to deal with normal stresses. However, if continuous stress occurs in which the body is not given sufficient recuperation, the stress becomes chronic which can lead to a variety of symptoms.

In order to produce all three catecholamines, the body requires the amino acid tyrosine as well as the essential amino acid phenylalanine (which can only be obtained from foods). These amino acids are used to synthesise dopamine, noradrenaline and adrenaline. Vitamin C, vitamin B6, vitamin B12, copper, magnesium and folic acid are required as co-factors in this process.

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Food sources that provide sufficient amount of the necessary amino acids are poultry, eggs, meat, fish, legumes, nuts, and seeds. Only if you tolerate milk well, milk products are also a good source of protein.

Vitamin C is contained, in particular, in citrus fruit, strawberries, kiwis, guava, black currants, papaya, fennel, broccoli, bell peppers, and Brussels sprouts.

Particularly high amounts of vitamin B6 are contained in the following foodstuffs: Whole grain products, potatoes, bananas, legumes (e. g. soy beans, lentils), avocados, carrots, Brussels sprouts, sunflower seeds, walnuts, liver, meat and fish.

Particularly high amounts of vitamin B12 are contained in the following foodstuffs: liver, kidneys, saltwater fish (in particular tuna, herring, and mackerel), salmon, seafood, meat, and eggs. Only if you tolerate them well, milk products and cheese (in particular Gouda, Edam, Camembert) are a good source of vitamin B12.

A high copper content exists, in particular, in calf and beef liver, amaranth, quinoa, millet, prawns, oysters, legumes, nuts and seeds (in particular in pumpkin seeds and cashew nuts).

A considerable amount of magnesium is also contained in amaranth, quinoa, legumes, as well as nuts and seeds.

Liver, legumes, nuts and seeds also contain a lot of folic acid. Furthermore, endive, parsley, cauliflower, broccoli, Brussels sprouts, kale and leeks are good sources of folic acid.

Your dopamine level is elevated

Your noradrenaline value is elevated

Your noradrenaline/adrenaline ratio is elevated

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Dopamine

Dopamine is one of the most important messenger substances in the brain. Dopamine acts mostly in a stimulating manner. It is particularly essential for coordination, motor functions, memory and learning as well as for concentration and mental performance. In addition, together with serotonin, it has a mood-lifting effect and regulates the so-called reward system and therefore drive and motivation. The well-functioning interaction between these two neurotransmitters is extremely important.

Excess dopamine

In acute stress, dopamine secretion is increased. Elevated dopamine can reduce the ability to recuperate and regenerate, resulting in daytime fatigue and difficulty concentrating. Additional potential symptoms are: Digestive problems, difficulty sleeping, restlessness, and mental disorders (schizophrenia).

Elevated dopamine can be caused by acute stress or the beginning of chronic stress. Taking drugs can also lead to an elevated dopamine level.

Noradrenaline

Noradrenaline can have the effect of increasing blood pressure, attentiveness, alertness, concentration, willingness to perform, motivation and motor functions. It is also involved in the control of a multitude of hormones.

Excess noradrenaline

A noradrenaline level that is too high can lead to symptoms of anxiety, to hypertension, as well as to hyper activity.

Causes can stem from acute stress or beginnings of chronic stress. Post-traumatic stress disorder can also lead to an elevated noradrenaline level.

Noradrenaline/adrenaline ratio

The noradrenaline/adrenaline ratio is a good indicator for the general stress situation.

A ratio below 3 typically is indicative of severe chronic stress. The cause for such a low ratio can be a noradrenaline deficiency (e. g. due to the diminished production of noradrenaline or a deficiency of amino acids or micro-nutrients) or – more rarely – an excess of adrenaline.

A value between 3 and 7 is indicative of a balance ratio of the two messenger substances. In this, it has to be taken into consideration that this value can also be achieved in case of a concomitant increase or reduction of both parameters.

A value between 7 and 12 can be due to elevated noradrenaline (as reaction to stress) or – more rarely – due to diminished adrenaline.

Ratios above 12 are indicative of a significant imbalance of the messenger substances and are quite often associated with nervousness, difficulty sleeping, lack of drive, and lack of concentration all the way to the full-blown picture of a burnout syndrome.

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Cortisol

Cortisol, also called the "stress hormone", generally effects the body's adaptation to stimuli. It is secreted in response to stress and plays an important role in the complex regulation of other messenger substances involved in coping with stress. Its varied effects include increased metabolism and blood glucose for energy production, controlling the distribution of fat in the body (accumulation of fat in the abdominal region), increased appetite, lowered sensitivity to pain, altered emotional sensitivity, inhibition of growth processes, decreased immunity and inhibition of inflammation. On the other hand, in case of a continuously high cortisol level, inflammatory activity in the body can be increased.

The production of cortisol from cholesterol takes place in the cortex of the suprarenal gland and is subject to a circadian rhythm. While sleeping, during the second half of the night, the body produces the most cortisol, so that in the morning, shortly after getting up, the cortisol level is at its highest. It quickly drops by the early afternoon and then slowly drops further until the late evening. During the course of the second half of the night it increases again greatly. Within this basic rhythm, the level of cortisol rises briefly and slightly in case of acute stresses during the day.

However, in case of chronic stress, this rhythm can go haywire. Therefore, the deviations of the level of cortisol from their normal course are a good indicator of the current stress load.

In acute stress situations, the morning-time outpouring of cortisol increases and normalises in the course of the day. In the case of continuous stress, the entire daily curve shifts upward, meaning that the cortisol level is elevated permanently. If the stress load remains and turns into chronic stress, the daily rhythm may become "chaotic", meaning that the level of cortisol moves outside of the normal values for the time of day. If the chronic stress persists even longer, then, at some point, the production of cortisol ceases and cortisol level drops below the normal level. Lowered cortisol values are being measured in, for example cases of burnout syndrome.

People who exercise regularly have a lower level of cortisol than those who do not exercise. This is also true during acute stress: short term spikes in cortisol are less pronounced in individuals who exercise regularly. In the elderly, the body's stress reaction is also much more pronounced.

Your cortisol level is elevated until lunchtime

Excess cortisol:

An elevated cortisol level leads to symptoms such as difficulty sleeping, tenseness, metabolic disorders with weight gain, increased abdominal fat, elevated cholesterol values, hypertension, and susceptibility to infection.

Acute stress and the beginnings of chronic stress can be the cause for elevated cortisol.

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PARAMETERS OF NEUROSPOT FUNCTIONS AND SYMPTOMS AT A GLANCE

Parameters	Responsible for	Symptoms at elevated level	Symptoms at diminished level
Serotonin	Mood Appetite Sleep	Rarely - except within the context of medication and serotonin syndrome	Depression Anxiety Sleeping difficulty Excessive appetite Headache Hot flashes Obsessive compulsive disorders
Dopamine	Good mood Joy and feeling well Satisfaction Voluntary muscle coordination Digestion Memory	Dyspepsia Developmental delay Attention disorders / concentration difficulty Mental disorders Autisms	Addiction problems Food craving attacks Motor disorders Restless legs syndrome Parkinson's Disease
Noradrenaline	Attention / focus Alertness Emotional stability Emotional memory Endocrine function	Anxiety Hyperactivity Hypertension Post-traumatic stress disorder ADHD	Lack of energy Concentration difficulty Loss of motivation Abjection Impaired sensitivity to pain
Adrenaline	Energy Motivation Concentration States of agitation	Sleeping difficulty Anxiety Attention disorders	Fatigue / exhaustion Problems concentration Difficulties in losing weight
GABA	Rest and relaxation Learning Memory	Counter-regulation of increased excitatory neurotransmitters while under anaesthesia/tranquilizers	Uncontrolled fear Hyperactivity Sleeping difficulty
Glutamat	Learning Memory States of agitation	Disquiet Abjection Cramps Immune disorders Obsessive compulsive disorders Autisms	Fatigue / exhaustion Impaired perception Schizophrenia
DHEA	Decreases greatly with age Helps in dealing with stress Activation of the immune system Motivation	No symptoms	Increased susceptibility to stress Malaises Depression Lack of sex hormones PMS Menopausal problems
Cortisol	Adaption to increased requirements due to stress Elevation of blood glucose level Inhibition of immune response Increased appetite Lowering of pain threshold	Sleeping difficulty Metabolic disorders with overweight Increased abdominal fat Elevated cholesterol values Hypertension Susceptibility to infection	Difficulty getting up in the morning Fatigue Passivity Apathy Increased sensitivity to pain Forgetfulness

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The examination of Mr John Patient, born on 01.01.1964, was carried out under my direction.

A handwritten signature in blue ink, appearing to be "L. Grüter". The signature is stylized with a large loop at the top and a long, sweeping stroke extending downwards and to the left.

Dr. med. Ludwig Grüter
Medical specialist for laboratory medicine

This finding was generated electronically and has been medically validated.

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THERAPEUTIC ORIENTATION AID

The mode of administration as well as duration, dosage and combination of the therapeutic approaches mentioned herein are fundamentally at the competent discretion of the treating therapist, upon evaluation of medical history as well as any further laboratory examinations, and taking into account the individual patient's situation. Within the framework of a therapy, they merely constitute an orientation aid, albeit a tried and tested one.

In view of this fact, no liability can be assumed for the effectiveness of this orientation aid.

Serotonin level regulation

Serotonin plays an essential role in regulating overall neurotransmitter and hormone balance. Regulated serotonin levels therefore will also help balance other stress parameters. Thus, it makes sense to focus on regulating serotonin levels as a first step. This applies both to a proven lack of serotonin or deficiency symptoms that might exist in spite of normal serotonin levels. For therapy control and adjustment purposes, it is advisable to recheck all parameters with NeuroSpot after ca. 6 weeks. Taking into account the changed values, as the case may be, the regulation of other parameters may be approached in a targeted manner. In case of severe fatigue, rechecking values during therapy may only be necessary after ca. three months, seeing as the body takes some time to recover from severe deficiencies.

THERAPY:

Based on each individual's disposition, serotonin production as well as receptor sensitivity may vary significantly. For this reason, therapeutic recommendations may vary as well. In cases where serotonin therapy does not yield the desired result, a genetic test may be helpful.

CAVE: Serotonin is removed from the synaptic cleft through reuptake into the neurones. Serotonin is broken down by the enzyme monoamine oxidase (MAO). Thus, tryptophan/5-HTP must not be substituted during medication with serotonin reuptake inhibitors (SSRI) or MAO inhibitors.

In cases of MAO inhibitor or SSRI therapy, we recommend the preparation NEUROadapt (MITOCare), for example.

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The following preparations, amongst others, are suitable for regulating serotonin levels.

Preparation	Dosage	Remarks
NEUROtonin (MITOcare). See below for ingredients	Gradual increase: 1 - 0 - 1 after 2 weeks: 2 - 0 - 2	Additional GABA support, covering both essential inhibitory regulators. Contains 5-HTP , amino acids, adaptogens and neurotransmitter synthesis cofactors.
Proven formulation for serotonin level regulation. See table below	Symptoms during the day Gradual increase: 1 - 0 - 0 As required: 1 - 1 - 0 Symptoms during the night Gradual increase: 0 - 0 - 1 As required: 0 - 1 - 1 A careful increase in dosage is possible, if required.	The capsules can be manufactured in any suitable pharmacy. The capsules are kept in stock and ready for shipment, amongst others, at Flora Apotheke, Pharmacie International, Apotheker P. Domhardt e. K., Friesenstraße 24 A, 30161 Hannover, Germany. Phone: +49 511 34 13 87, Fax: +49 511 33 26 42 E-mail: mail@flora-pharm.de
NEUROadapt (MITOcare)	Initially: 1 - 0 - 1 After 2 weeks: 2 - 0 - 2	Supports natural neurotransmitter synthesis in the body by delivering necessary cofactors and provides adaptogens with balancing effects. Does not contain 5-HTP.

Remarks on administration and dosage as well as recommendations on combinations with other products can be found in the manufacturer's information.

The exact dosage with regard to age, sex, body weight and overall patient disposition is at the discretion of the treating therapist.

CAVE: The ingredient 5-HTP may cause nausea and gastrointestinal discomfort initially. In sensitive patients and in order to prevent serotonin syndrome, start dosage increasing gradually. Please control the therapeutic process through laboratory diagnostics with NeuroSpot regularly over the course of the therapy.

Formulations for prescription and non-prescription alternatives

Formulations	prescription alternative			non-prescription alternative		
	Dose per capsule in mg	Weighed portion per capsule in mg	Weighed portion per 100 capsules in g	Dose per capsule in mg	Weighed portion per capsule in mg	Weighed portion per 100 capsules in g
Zinc in orotate form	4,70	30,0	3,00	4,70	30,0	3,00
Riboflavin	5,00	5,0	0,50	5,00	5,0	0,50
Pyridoxal-5-phosphate	10,00	10,0	1,00	10,00	10,0	1,00
Nicotinamide	10,00	10,0	1,00	10,00	10,0	1,00
Mecobalamin, taurine trituration	0,05	20,0	2,00	0,05	20,0	2,00
Silicon dioxide, highly dispersed	5,00	5,0	0,50	5,00	5,0	0,50
5-hydroxytryptophan (5-HTP)	50,00	50,0	5,00	5-HTP is non-prescription if Griffonia extract is also declared.		
L-tryptophan	150,00	150,0	15,00	150,00	150,0	15,00
Taurine	100,00	100,0	10,00	100,00	100,0	10,00

Additionally, administrating 0.5 to 1 g of vitamin C per day is recommended.

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NEUROtonin (MITOcare) ingredients

Ingredient	Amount	Ingredient	Amount
5-HTP (griffonia-Extrakt)	100,00 mg	Betaine	150,00 mg
Choline	50,00 mg	Folic acid	400,00 µg
Lavender extract	100,00 mg	L-glycine	150,00 mg
L-glutamine	150,00 mg	L-methionine	150,00 mg
L-theanin	150,00 mg	L-tyrosine	50,00 mg
Magnesium	25,00 mg	Taurine	150,00 mg
Grape seed extract (OPC)	40,00 mg	Vitamin B ₃ (niacin)	120,00 mg
Vitamin B ₅ (pantothenic acid)	50,00 mg	Vitamin B ₆ (pyridoxine HCL)	10,00 mg
Vitamin B ₁₂ (cyanocobalamin)	50,00 µg	Vitamin C	40,00 mg
Vitamin E	10,00 mg	Zinc	5,00 mg

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Catecholamine regulation

Any therapy for imbalanced catecholamines must be closely oriented to the patient's symptoms.

In cases of serotonin deficiency symptoms such as anxiety, sleep disorders, depressive states, depression, restlessness, mood swings etc. serotonin synthesis should always be supported. The objective in such cases is to elevate serotonin levels towards the upper threshold (see also "Serotonin level regulation").

In cases of fatigue symptoms or concentration/memory disorders, promoting catecholamines is particularly advisable.

Adaptogens are active ingredients which restore overall balance. They aid the individual in adapting to stress and have a balancing effect on the nervous system and neurotransmitter as well as cortisol synthesis. Thus, they can be used for states of deficiency as well as excess.

Some examples of adaptogens are:

Active ingredient	Preparation	Dosage
Rhodiola rosea (phytotherapy)	Rhodiolan® Plus (Dr. Loges)	2-0-0- or 1-0-0
	Vitango (Schwabe Pharma)	1-1-0
Schisandra chinensis (phytotherapy)	Schisandra chinensis 300 mg cap. (Allcura)	3 x 1 capsule per day
	Schisandra 600 mg cap. (Nutritheke)	1 x 2 capsules per day
	Schisandra chinensis 500 mg cap. (Bioprophyll)	1 x 1-2 capsules per day
Whithania somnifera (phytotherapy)	Ashwaganda 4:1 extract 300 mg cap. (Hanoju)	1 x 1 capsule per day
	Ashwagandha drops (Biopure) contains 35% alcohol	3 x 2 drops per day or 10-15 drops in the evenings; always with water
Eleutherococcus (phytotherapy)	Eleu Curarina drops (Harras Pharma) contains 32% alcohol	2 x 30 drops per day
	Eleutherococcus Kapseln N (Bio-Diät-Berlin)	3 x 1 capsule per day
Ginseng (phytotherapy)	Roter Ginseng 300 mg tablets (Allcura or Aurica)	3 x 2 tablets per day
Ginkgo biloba (phytotherapy)	Rökan novo (Schwabe Pharma)	2-0-0 or 1-1-0

Remarks on administration and dosage as well as recommendations on combinations with other products can be found in the manufacturer's information.

The exact dosage with regard to age, sex, body weight and overall patient disposition is at the discretion of the treating therapist.

The complex preparation NEUROadapt (MITOCare), for example, also contains well-dosed amounts of all these adaptogens and thus naturally promotes catecholamine balance. Recommended dosage: 1-0-1 after 2 weeks 2-0-2

Detailed information on ingredients can be found at www.mitoshop.de

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Dopamine level regulation

Those adaptogens specified within the table of chapter "Catecholamine regulation" are also suitable for treatment of elevated dopamine levels. Thus, they can have a regulating effect in cases of stress symptoms due to excess dopamine such as restlessness, high blood pressure, attention deficit disorders, sleep disorders and many others.

Additionally, the homoeopathic complex preparation Manuia is an appropriate remedy.

Active ingredient	Preparation	Dosage
Homoeopathic complex preparation	Manuia (DHU)	1 - 3 times per day 1 tablet, in case of acute symptoms 1 tablet hourly or half-hourly (max. 6 tablets / day).

Remarks on administration and dosage as well as recommendations on combinations with other products can be found in the manufacturer's information.

The exact dosage with regard to age, sex, body weight and overall patient disposition is at the discretion of the treating therapist.

Regulation of elevated adrenaline/noradrenaline levels

The following preparations, for example, can be used to regulate elevated adrenaline and/or noradrenaline levels.

Active ingredient	Preparation	Remarks
Passiflora	e. g. Pascoflair (Pascoe) or Passiflora (WALA) or another suitable preparation	
Valerian, lemon balm, passiflora	Valeriana (Hevert)	
Complex remedies	Calmvalera (Hevert)	
St. John's wort, valerian, passiflora	Neurapas (Pascoe)	CAVE: Not with SSRI an MAO inhibitors
Homoeopathic complex preparation	Simvita (Rubimed)	1 - 3 tablets per day
	Manuia (DHU)	2 x 12 drops per day
	Neurexan (Heel)	In cases of nervous agitation and sleep disorders
Lavender oil	Lasea (Schwabe Pharma)	Good tolerability, in case of symptoms during the night: 0 - 0 - 1, during the day: 1 - 0 - 0, 1 - 0 - 1 is also possible
	10-minute footbath and 10-minute reflex zone massage	Use carrier oil to massage, e.g. jojoba oil

Remarks on administration and dosage as well as recommendations on combinations with other products can be found in the manufacturer's information.

The exact dosage with regard to age, sex, body weight and overall patient disposition is at the discretion of the treating therapist.

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Regulation of the stress messenger substances dopamine/cortisol

Optimised serotonin levels also have a balancing effect on stress parameters such as dopamine and cortisol. Thus, we recommend focussing on regulating serotonin levels as a first step. The target in such cases should be values in the upper third of the normal range. After ca. 6 weeks, serotonin level regulation therapy can already yield good results. Due to the optimisation of serotonin levels, other parameters have often improved during said space of time as well.

We therefore recommend laboratory diagnostics with NeuroSpot after 6 weeks in order to align further treatment to the values changed in the meantime.

Regulation of elevated cortisol levels

Tambogia (*sutherlandia frutescens*), for example, can be administered as a regulating adaptogen for elevated cortisol levels.

Further suitable preparations, amongst others:

Preparation	Remarks
Pro Sirtusan (Tisso)	Contains antioxidant polyphenols
Pro Curmin Complete (Tisso)	
Neurapas balance (Pascoe)	In cases of nervous agitation, depressive moods
Neurexan (Heel)	In cases of nervous agitation and sleep disorders
Lasea (Schwabe Pharma)	In cases of nervous agitation, anxiety states, sleep disorders. Symptoms during the night: 0 - 0 - 1, during the day: 1 - 0 - 0, 1 - 2 - 1 is also possible

Remarks on administration and dosage as well as recommendations on combinations with other products can be found in the manufacturer's information.

The exact dosage with regard to age, sex, body weight and overall patient disposition is at the discretion of the treating therapist.

Regulation of cortisol levels with regard to symptoms

Essentially, cortisol therapy is oriented to symptoms.

In cases of serotonin deficiency symptoms such as anxiety, sleep disorders, depressive states, depression, mood swings, but also agitation, restlessness etc., serotonin levels should always be considered as well. The objective in such cases is to elevate serotonin levels towards the upper threshold (see also "Serotonin level regulation").

In cases of fatigue symptoms or concentration/memory disorders, a therapy designed to support cortisol is advisable.

In cases of disordered diurnal rhythms, the objective should be to restore them. That means preparations should be taken at times when cortisol levels are not in line with the diurnal rhythm.

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In cases of nervous agitation

Passiflora extract has a balancing effect on states of nervous agitation and can support cortisol level regulation. Suitable preparations, amongst others, are:

Active ingredient	Preparation
Passiflora extract	e. g. Pascoflair (Pascoe) or Passiflora (WALA)

Remarks on administration and dosage as well as recommendations on combinations with other products can be found in the manufacturer's information.

The exact dosage with regard to age, sex, body weight and overall patient disposition is at the discretion of the treating therapist.

In cases of fatigue

In cases of fatigue symptoms, excitatory messenger substance support may be done with irregular, even with elevated cortisol levels. Suitable preparations, amongst others, are:

Preparation	Dosage	Remarks
For NEUROaktiv (MITOcare) ingredients see www.mitoshop.de	Initially: 1 - 1 - 0 After two weeks: 2 - 2 - 0	Contains essential nutrients which support adrenal gland function, cortisol synthesis cofactors as well as adaptogens such as maca and rhodiola. Contains 5-HTP
Phyto Cortal (Steierl)		Adrenal gland support
Phyto C (Steierl)		Increase dosage gradually, as required

Remarks on administration and dosage as well as recommendations on combinations with other products can be found in the manufacturer's information.

The exact dosage with regard to age, sex, body weight and overall patient disposition is at the discretion of the treating therapist.

Adaptogens for cortisol level regulation

Adaptogens are active ingredients which restore overall balance. They aid the individual in adapting to stress and have a balancing effect on the nervous system and neurotransmitter as well as cortisol synthesis. Thus, they can be used for states of deficiency as well as excess. Some examples of adaptogens are: Rhodiola rosea, schisandra, withania somnifera, ginseng, ginkgo biloba, eleutherococcus.

The complex preparation NEUROadapt (MITOcare) also contains well-dosed amounts of all these adaptogens and thus naturally promotes cortisol level balancing.

Recommended dosage: 2-0-2

Detailed information on ingredients can be found at www.mitoshop.de

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Stress management

Elevated values for stress messenger substances (dopamine, noradrenaline, adrenaline, glutamate, cortisol) indicate a high level of stress.

In the first instance, stress is a physiological reaction of the body in situations of increased pressure which helps the individual to cope with said situations. A promising treatment approach for stress-related symptoms is therefore the determination of causes for stress and the elimination of those causes, where possible. Drug therapy alone is often not sufficient for lasting improvements. We recommend sustainable stress management tailored to individual living circumstances with the help of an expert.

Professional stress management may focus on reducing perceived pressure in order to increase the patient's well-being as well as his/her capacities. The basis thereof is a detailed analysis of causes for stress created together with the patient. It yields techniques suitable for each patient which can be used to reduce perceived pressure. Those techniques may be time management, yoga, hypnosis, autogenic training, progressive muscle relaxation, mindfulness training, physical exercise, dietary changes, communication training, personal demand management or psychotherapy, amongst others. The choice of techniques should always happen together with the patient and tailored to his/her individual needs. Temporary intensive supervision by the stress therapist and regular result testing for the chosen techniques are also part of a professional stress management.

Increased micronutrient requirements in situations of stress

Due to stress, requirements in terms of micronutrients contributing to maintaining normal immune functions and protection against oxidative stress may multiply. Through dietary supplements the supply of vitamins, micronutrients and polyphenols essential for the human body can be supported.

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Intestinal Repair

It is not uncommon for chronic stress to cause inflammation in the intestinal mucous membrane. However, intestinal health is crucial for an individual's neurotransmitter balance. Only a healthy bowel can absorb the micronutrients required for neurotransmitter synthesis sufficiently. Due to the close connection between the ENS (enteric nervous system) and the CNS (central nervous System), also referred to as the gut-brain axis, gastro-intestinal dysbiosis also causes adverse psychological effects. Especially in cases of present intestinal complaints pointing to a likely disturbed bowel function, intestinal repair can effectively support and supplement neurotransmitter regulation therapies.

For example, the following preparations are suitable to this end:

Preparation	Dosage	Remarks
Flora Balance (MITOcare)	20 ml in the mornings, ca. 6 - 18 months	Contains 24 probiotic bacterial strains (10 ¹¹ germs per 100 ml), select digestive bitter compounds and plant extracts.
AND		
Flora Immun PLUS (MITOcare)	3 measuring spoons in the evenings, ca. 6 - 18 months	Contains 8 bacterial strains (ca. 10 ¹⁰ germs per daily portion), colostrum, glutamine and psyllium seed husks.
Pro Emsan (Tisso)	15 - 30 ml, ca. 6 - 18 months	
Pro Basan Complete (Tisso)	1 - 2 g powder, ca. 6 - 18 months	
Pro Mucosa (Tisso)	6 - 12 capsules, ca. 6 - 18 months	In case of mucous membrane-cleansing therapy resistance and persistently low serotonin levels.
Omni Biotic Stress Repair (Allergosan)	1 sachet in the mornings and / or evenings	
Omni Biotic Power (Allergosan)		
Symbioflor (Symbiopharm) according to the following formula:		
Weeks 1 - 4 (month 1) Pro-Symbioflor	2 x 5 drops/day. Increase daily, towards 2 x 20 drops/day	
Weeks 5 - 24 (months 2 - 6) Symbioflor 1	2 x 30 drops/day	
Weeks 17 - 24 (months 4 - 6) Symbioflor 1 and additionally Symbioflor 2	2 x 30 drops permanently 2 x 5 drops/day Increase daily, towards 2 x 20 drops/day	

Remarks on administration and dosage as well as recommendations on combinations with other products can be found in the manufacturer's information.

The exact dosage with regard to age, sex, body weight and overall patient disposition is at the discretion of the treating therapist.

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NOTE: Fundamentally, the treating therapist's orders should be observed for all preparations specified in this therapeutic orientation aid. Recommendations regarding administration and dosage can be found in the manufacturer's information.

Therapy control

We recommend a laboratory diagnostic therapy control using NeuroSpot ca. 6 weeks after the start of the therapy and, as the case may be, appropriate treatment adjustments. In cases of severe neurotransmitter deficiency, however, it may be reasonable to control levels only after 3 months, since the body takes a certain amount of time to balance the deficiency.

Sources of supply:

Mitocare products: www.mitoshop.de or in pharmacies

Tisso products: <https://shop.tisso.de>

All other products mentioned are available in pharmacies or online.