Lithium

An underestimated trace element with preventive medical potential

*Although lithium performs important functions in the body, it has not yet been classified as essential. In **functional medicine**, however, lithium is increasingly valued as a **neuroprotective micronutrient** – with impressive properties even in the smallest amounts. In contrast to conventional **lithium therapy** as used in psychiatric disorders, this approach does not involve pharmacological doses, but rather the targeted analysis and application of **physiological trace amounts** (microdosing).*

WHY LITHIUM MAY BE IMPORTANT

Neuroprotection & neurogenesis

Lithium promotes the formation of new neurones and protects the brain from oxidative stress and inflammation. It shows promising effects in neurodegenerative diseases such as Alzheimer's and Parkinson's [2].

Mood & resilience

Even low doses can balance mood fluctuation, alleviate depressive symptoms, and improve stress resilience – even in people without a psychiatric diagnosis [1].

Mental health & environmental factors

Studies show: Regions with higher lithium levels in drinking water correlate with lower suicide rates and better mental health.

Gut-brain axis & inflammation

Lithium regulates inflammatory processes, including those in the gut, and supports a healthy microbiome, which is important for gut-brain communication [3].

Mitochondria & energy

Lithium increases ATP production, reduces oxidative stress, and optimises mitochondrial signalling pathways, which is helpful for treating chronic fatigue and a lack of energy [4].

Hormones & thyroid

Lithium affects thyroid function – monitoring is recommended when taking lithium.

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DIAGNOSTICS AT A GLANCE

At biovis, you can have the following parameters tested:

I280 Lithium in Serum

I285 Lithium in Whole Blood

LABORATORY VALUES & NORMAL RANGES

Lithium in serum – for therapy monitoring

The determination of lithium in serum is used exclusively **to monitor lithium therapy**, for example in **bipolar disorders or manic-depressive illnesses**.

The therapeutic target range is 0.5–1.2 mmol/l (corresponding to approx. 3500–8500 µg/l) and is therefore significantly higher than for preventive medical use [6]. As lithium has a narrow therapeutic range, regular laboratory monitoring is essential to avoid toxic levels.

PRE-ANALYTICS FOR LEVEL MONITORING

Blood sampling should be carried out 12 hours after the last dose of lithium (e.g. last dose at 8 p.m., blood sampling at 8 a.m.).

Lithium in EDTA whole blood – for status assessment

Measurement of lithium in whole blood is suitable for individuals who are not receiving lithium therapy. It allows assessment of lithium status resulting from natural intake via drinking water and diet.

The physiological reference range in this case is 0.5–3 µg/l.

Preventive medicine target range

In microdosed, preventive use of lithium – e.g. to support neuropsychiatric health – the target range specifically for preventive purposes is 25–350 µg/l in whole blood. This is higher than the physiological reference range.

The dosages used for this purpose are typically in the range of 1–10 mg of elemental lithium per day, and are thus well below the therapeutic doses used in psychiatric disorders.

Parameters	Lithium in Serum	Lithium in Whole Blood
Indication	level monitoring in medicinal lithium therapy	preventive medicine
Normal range	0,5 –1,2 mmol/l (3500–8500 µg/l)	0,5 –3 µg/l
Therapeutic dosage	individual dosage depending on the clinical picture (commonly 400–900 mg/day)	1-10 mg/day
Dosage form	lithium carbonate	lithium orotate

AVOID INTERACTIONS

Serious interactions are significantly less common with lithium microdosing than with therapeutic dosing – nevertheless, potential interactions may occur. Particular caution should be exercised when taking blood pressure-lowering, diuretic, or CNS-active medications at the same time.

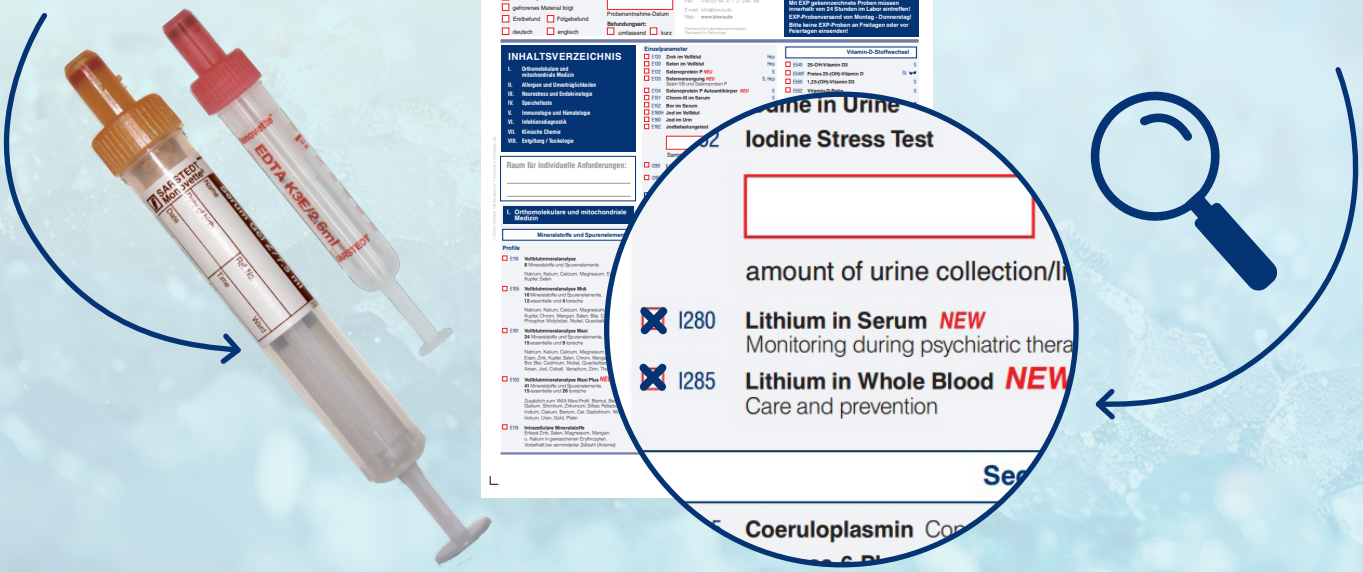
- CNS-active substances
- SSRI/SNRI
- neuroleptics, antipsychotics
- carbamazepine, lamotrigine
- kidney-active drugs
- ACE inhibitors
- sartans
- thiazide diuretics
- NSAR

IMPORTANT

CONTRAINDICATIONS FOR LITHIUM MICRODOSING:

- **impaired kidney function**
- **thyroid disorders**
- **insufficient fluid supply**
- **sodium imbalances**
- **people with lithium hypersensitivity**
- **if applicable, pregnancy and breastfeeding**
- **if applicable, children and adolescents**

For the examination, you will need either a **serum** or an **EDTA tube**, depending on the clinical question.



You can request **lithium in serum** and **lithium in whole blood** using our request form A14 (**I280** and **I285**).

Bibliography

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[6] Hamstra, Sophie I et al. "Beyond its Psychiatric Use: The Benefits of Low-dose Lithium Supplementation." Current neuropharmacology vol. 21,4 (2023): 891-910. doi:10.2174/1570159X20666220302151224

YOU CAN FIND FURTHER GENERAL INFORMATION ON OUR HOMEPAGE.

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