microba

BCAAs producing microbes
Marker Guide

What this marker measures

The collective capacity of the microbial community to produce branched-chain amino acids (BCAAs). Although BCAAs are essential amino acids obtained from the diet, the gut microbiome may also contribute to the body's circulating BCAA pool. Higher BCAA-producing potential may contribute to elevated circulating BCAAs in some individuals[1]. Elevated circulating BCAAs may be associated with systemic inflammation, unfavourable lipid profiles and insulin resistance.[1–4]

Clinical associations

Consider this marker when your patient presents with:

Systemic inflammation and metabolic risk

- Chronic low-grade systemic inflammation of unclear origin, particularly when accompanied by insulin resistance, impaired glucose regulation, or dyslipidaemia.
- High levels of plasma BCAAs may be associated with systemic inflammation in women.

Interpreting the result

All results are compared to Microba's healthy cohort to determine whether they fall within or outside the expected range.

LOW

BCAA-producing potential is lower than expected

Microbial BCAA production is unlikely to be contributing to elevated circulating BCAAs. Interpret alongside diet, metabolic status, and clinical presentation.

WITHIN RANGE

BCAA-producing potential is within expected parameters

This result does not suggest excess microbial contribution to circulating BCAAs.

HIGH

BCAA-producing potential is higher than expected

May contribute to elevated circulating BCAAs in some individuals, which may be associated with systemic inflammation, as well as insulin resistance and dyslipidaemia.
Action: see Patient management insights guidance below.

Patient management insights

Support healthy BCAA metabolism and reduce potential contributors to elevated circulating BCAAs.

DIETARY STRATEGIES

- High-fibre vegan diet may reduce BCAA levels in blood[5,6] C
- Rye consumption may reduce fasting plasma BCAA levels in those with metabolic syndrome or elevated cholesterol[7,8] C
- Choosing fish in place of meat may reduce serum BCAAs in overweight individuals[9,10] D
- A Mediterranean diet may reduce plasma BCAA levels[11,12] D

EXERCISE STRATEGIES

- Exercise may support insulin sensitivity by promoting enhanced BCAA breakdown.[13, 14, 15, 16] D

Tips for patients discussion

Your report shows an elevated capacity for gut microbes to produce branched-chain amino acids (BCAAs). While these are essential, higher circulating levels have been linked to insulin resistance, inflammation and metabolic risk in some people. Regular exercise and a shift towards fibre-rich plant foods, fish or plant-based proteins, and Mediterranean-style eating help support healthier BCAA metabolism

The community

BCAAs are not produced by a single species, it's a community-level function. Below are some of the most common, though this list is not exhaustive.

Agathobacter faecis	*Alistipes obesi*	*Alistipes onderdonkii*
Alistipes shahii	*Bacteroides caccae*	*Bacteroides ovatus*
Bacteroides thetaiotaomicron	*Bacteroides uniformis*	*Bacteroides_B dorei*
Bacteroides_B vulgatus	*Barnesiella intestinihominis*	*Blautia_A sp900066165*
CAG-41 sp900066215	*CAG-56 sp900066615*	*Fusicatenibacter saccharivorans*
GCA-900066135 MIC6659	*KLE1615 sp900066985*	*Odoribacter splanchnicus*
Parabacteroides distasonis	*Parabacteroides merdae*	*Roseburia hominis*
Roseburia inulinivorans	*Ruminococcus_A sp003011855*	*UBA1417 sp003531055*

How results are calculated

All microbiome marker results are compared against the Microba Healthy Cohort — a purpose-built group of more than 450 healthy individuals, with samples collected and analysed using the same workflow as patient samples.

Each marker is scored by comparing the patient's relative abundance against the cohort average. The distance from this average is expressed as standard deviations, and determines whether a result is classified as Low, Borderline, or High.

How the result scale works

▲ AVG (Healthy Cohort average)

The patient's relative abundance is compared to the Healthy Cohort average. A **negative** distance from average means the microbial group is less abundant than the Healthy Cohort. A **positive** distance means it is more abundant. Results falling outside the expected range are classified as borderline or high/low (borderline high/low: +/-0.68, and high/low: +/-1.28).

GRADE	DESCRIPTION
A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation, but care should be taken in its application
D	Body of evidence is weak, and recommendation must be applied with caution
PP H	Body of evidence is observational only and must be applied with caution
PP IV	Body of evidence is in vitro and must be applied with a high degree of caution

Evidence grading for patient management insights

The letter grades shown next to each patient management insight show the quality of the research behind it. Every insight provided has been through a rigorous review of the scientific literature and graded using the NHMRC Levels of Evidence, so you can see exactly how strong the evidence is before applying it in practice.

Access references