

From the microbiome and metabolome to more targeted therapy

These include, for example, butyrate production, histamine, neurotransmitters, microbial toxins such as p-cresol and indoxyl sulfate, AhR agonists and diversity.

That is exactly why we have restructured the probiotic and prebiotic therapy tables.

The axes therefore help to translate an extensive set of test results into concrete therapeutic tasks:
What is disturbed – and which measure fits?

Toddlers 1-3 Years - Still Primarily Age-Based

Age-appropriate probiotics also remain important in toddlers. Compared with infancy, the focus (microbiome) shifts to immune support, dysbiosis, allergy and digestive function.

1-3 Years: Use the toddler table first. It offers a manageable selection for the most common clinical questions in 1-3 years.

Product	Mucosa	Inflammation	Barriers	Leaky Gut	Immune	Candida	Microbiome	Primary
Puritan	+	+	+	+	+	+	+	+
Medtronic	+	+	+	+	+	+	+	+
...	...	...	...	...	...	...	...	...

Infants 0-1 Year - Age-Based Selection

For infants, the infant table should always be used during the early stage of life. The microbiome has significant maturation processes. The case therefore contains a selection of important categories and steps.

0-1 Year: The infant table is the primary level of selection. The adult table is not a regular selection table.

Product	Mucosa	Inflammation	Barriers	Leaky Gut	Immune	Candida	Microbiome	Primary
Puritan	+	+	+	+	+	+	+	+
Medtronic	+	+	+	+	+	+	+	+
...	...	...	...	...	...	...	...	...

Check which probiotic best complements the functional goals relevant to the infant. Special requests can be made.

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Why was a new table necessary?

The previous table was designed for the classic therapeutic goals and worked well for them. Today, however, extended microbiome and metabolome diagnostics reveal additional disturbances that were not yet sufficiently taken into account.

If, for example, we identify a histamine problem or elevated microbial toxins, it makes a difference whether a probiotic tends to support this axis or not. These are exactly the differences we want to make visible.

Previously given particular consideration	Now also taken into account
Milieu / pH	Diversity
Inflammation	Butyrate production
Leaky gut	Histamine
Pathogens / Candida	Neurotransmitters
Immune function	Microbial toxins
	AhR agonists

What do the new axes mean in practice?

Butyrate production

Based on functional bacterial groups, we were already able to estimate whether the microbiome is fundamentally capable of producing butyrate. For therapy, however, this information was of limited use because conventional probiotics are usually not strong butyrate producers.

Today, we can address the butyrate axis in a more targeted way. Probiotics can support it indirectly. Prebiotics, however, often have a stronger effect here because they supply substrate specifically to existing butyrate producers.

Butyrate is an important energy source for colonocytes, stabilizes the intestinal barrier and has inflammation-regulating effects. It is therefore worthwhile to treat reduced butyrate production in a targeted way.

Histamine

In histamine intolerance or histamine-associated complaints, it makes sense to take the histamine axis into account when selecting a probiotic. Not every preparation is equally suitable here.

Neurotransmitters and the gut-brain axis

In IBS, stress and disorders of gut-brain axis, different functional properties may be important than in a pure milieu disturbance. That is why there is a separate axis for this.

Microbial toxins

p-Cresol and indoxyl sulfate are microbial metabolites that may be relevant in metabolic syndrome and diabetes, cardiovascular diseases and chronic kidney disease, among others. If they are elevated, therapy should also aim to influence the underlying microbial processes.

AhR agonists

Certain microbial tryptophan metabolites activate the aryl hydrocarbon receptor (AhR) and thereby support barrier and immune regulation. If these metabolites are lacking, this creates an additional therapeutic task.

Diversity

Reduced diversity cannot simply be "topped up" with another probiotic. Diet and substrate supply play a greater role here. That is why prebiotics are often particularly important for this axis.

The key question is now different

Many probiotics are described in very similar terms: support for the gut flora, barrier and immune system. For a specific selection, this is often not enough.

Not: Which probiotic is good? But: Which probiotic best matches this patient's abnormal axes?

This makes the selection more results-based and easier to understand.

How were the ratings developed?

For the new table, we did not simply adopt the manufacturers' claims. We compiled the available information on each preparation as systematically as possible and assessed it according to the same functional criteria.

Where studies on the finished product were available, they were taken into account. Often, however, there are considerably more scientific data on the individual strains contained than on the product as a whole. We therefore also examined which effects have been described for the respective strains and whether these properties are consistent with the composition of the finished preparation.

In addition, strain combination, dosage and product matrix were considered. The matrix in particular is of practical importance: carriers or added prebiotics can help determine whether a product is well tolerated, for example by a sensitive gut.

Over many months, this information has been developed into a functional rating matrix. The plus signs are therefore neither a manufacturer rating nor a ranking, but a uniform therapeutic guide: Which axes does a preparation cover particularly well – and where are its limits?

The table is scientifically grounded and at the same time designed for everyday practice. New studies, new products and new findings on individual strains are continuously added and may, of course, change the ratings.

Why are there product groups?

If we were to present every single probiotic in full with all its strain, matrix and indication information, the table would hardly be manageable. We have therefore first combined preparations with a shared, particularly strong main indication into product groups.

One example: several preparations may be particularly well suited for milieu stabilization. These then form a group. We then check how well all preparations in this group also cover inflammation, leaky gut, histamine or other axes. This makes it quick to see whether a group matches several of a patient's abnormalities at the same time.

The group value is important here. It is always based on the weakest preparation within the group. If three products are rated +++++, ++++ and +++ on one axis, the group receives +++. This way you can be sure that every preparation in this group achieves at least +++; individual products may be considerably stronger.

The groups are thus a deliberate simplification for everyday practice. They are first intended to answer the question: Which product group matches my patient's abnormal axes? The finer selection of an individual preparation will later become even more precise with additional clinical information and the planned probiotics engine.

Example: +++++, ++++ and +++ in one group result in a group value of +++. This means every product in this group achieves at least +++.

Probiotics Indications		OB 6 AB Select Lb Premium BG Basic VSL#3	BG MetaB Plus BG Long Vital	OB SR-9 BG Stress AB Compens Lb Forte	OB Hetox light SAH Hista-Care AB Compens BG Stress	OB Power BG SR&C AB Relief KJ Immun	OB 10 BG SR&C AB Akut Lb AAD	SAH Hista-Care AB Sensitive VP Biot Sensitiv	OB SR-9 BG Stress Lb Forte	BG SR&C BG Stress BG Long Vital
Infants (0-1)	s.b.									
Children	s.b.									
Adults		+++	+++	+++	+++	+++	+++	+++	+++	+++
Older adults	s.b.	++	++	++	++	++	++	++	++	++
Milieu (pH+)		+++++	+++	+++	+++	+	+++	+++	+++	+++
Diversity		+	++	+	+	+	+	++	++	+++
Butyrate prod. (indirect)		+	++++	+			+			
Inflammation		+++	+++	+++++	+++	+	++	+++	+++	+++
Leaky Gut		+++	+++	+++	+++++	+	+++	+++	+++	+++
Immunomodulation		++	+++	++	++	+++++	++	++		+++
C. difficile, PO, PPO		+	+++	+		++	+++++	++		+++
Candida		+	+	+	+		++++			+
Histamine								+++++		
Neurotransmitter								+++	+++++	++
Toxins: p-cresol, IS			+							+++++
AhR agonists										+++++

Legend: +++++ Main indication | +++ strong effect | ++ moderate effect | + slight effect | no effect

Abbreviations: PO = pathogenic organisms, PPO = potentially pathogenic organisms, AhR = aryl hydrocarbon receptor, IS = indoxyl sulfate

How do I work with the probiotics table?

The table does not need to be read in full, row by row. The starting point is always only the changes that are actually relevant for the individual patient.

1. Look only at the abnormal axes

If, for example, pH ↑, inflammation ↑ and leaky gut ↑ are abnormal in the test results, mentally mark exactly these three axes. All other columns are initially of secondary importance for the first selection.

2. Look for the best shared coverage

Now look for a product group that covers these three axes well collectively. As a practical guide, the important main axes should reach at least +++ wherever possible. So you are not looking for a separate product for each abnormality, but first for the best common overlap.

3. One probiotic is often sufficient

If there is a group that adequately covers all relevant main axes, one probiotic from this group is usually sufficient. This is precisely the advantage of the table: selection becomes more targeted without therapy automatically becoming more extensive.

4. A second probiotic only for a real gap

If, on the other hand, a clinically important axis remains clearly below the desired coverage, a second, complementary probiotic may be useful. It should specifically add the missing function. The two preparations can be used in a staggered manner, for example morning and evening, or sequentially.

Important: Diversity and butyrate production are special cases. If only these axes are less well covered, a second probiotic does not automatically need to be chosen. Here, a suitable prebiotic is often the more sensible addition.

As little as possible - as targeted as necessary.

PRACTICAL EXAMPLE: FROM TEST RESULTS TO THE MATCHING PRODUCT GROUP

1
ABNORMALITIES IN THE
EXAMPLE PATIENT

pH value elevated ↑

Inflammation ↑

- F. prausnitzii ↓
- α1-antitrypsin ↑
- Calprotectin ↑

Leaky gut /
barrier disorder ↑

Toxins elevated ↑

- p-Cresol ↑
- Indoxyl sulfate ↑

2. Search the complete ORIGINAL probiotics table

Probiotics Indications	OB 6 AB Select LB Premium BG Basic VSL#3	BG Metab Plus BG Long Vital	OB SR-9 BG Stress AB Compens LB Forte	OB Hexox light SAH Hista-Care AB Compens BG Stress	OB Power BG SR&C AB Relief KJ Immun	OB 10 BG SR&C AB Akut LB AAD	SAH Hista-Care AB Sensitive VP Biot Sensitiv	OB SR-9 BG Stress LB Forte	BG SR&C BG Stress BG Long Vital
Infants (0-1)	s.b.								
Children	s.b.								
Adults	+++	+++	+++	+++	+++	+++	+++	+++	+++
Older adults	++	++	++	++	++	++	++	++	++
Milieu (pH+)	+++++	+++	+++	+++	+	+++	+++	+++	+++
Diversity	+	++	+	+	+	+	++	++	+++
Butyrate prod. (indirect)	+	++++	+	+	+	+	++	++	+++
Inflammation	+++	+++	++++	+++	+	++	+++	+++	+++
Leaky Gut	+++	+++	+++	++++	+	+++	+++	+++	+++
Immunomodulation	++	+++	++	++	++++	++	++	++	+++
C. difficile, PO, PPO	+	+++	+	+	++	++++	++		+++
Candida	+	+	+	+		+++			+
Histamine							++++		
Neurotransmitter							+++	++++	++
Toxins: p-cresol, IS		+							++++
AHR agonists									++++

++++ = main indication | +++ = strong effect | ++ = moderate effect | + = slight effect | no effect

Common overlap: BG SR&C · BG Stress · BG Long Vital

PRACTICAL EXAMPLE: pH ↑ · LEAKY GUT ↑ · CANDIDA ↑

1 ABNORMALITIES IN THE PATIENT		2 SEARCH THE ORIGINAL PROBIOTICS TABLE									
↑ pH value elevated → Milieu (pH+) ↑ Leaky gut / barrier disorder → Leaky Gut ↑ Candida → Candida		Probiotics Indications	OB 6 AB Select Lb Premium BG Basic VSL#3	BG MetaB Plus BG Long Vital	OB SR-9 BG Stress AB Compens Lb Forte	OB Hetox light SAH Hista-Care AB Compens BG Stress	OB Power BG SR&C AB Relief KJ Immun	OB 10 BG SR&C AB Akut Lb AAD	SAH Hista-Care AB Sensitive VP Biot Sensitiv	OB SR-9 BG Stress Lb Forte	BG SR&C BG Stress BG Long Vital
		Infants (0-1)	s.b.								
		Children	s.b.								
		Adults	+++	+++	+++	+++	+++	+++	+++	+++	+++
		Older adults	++	++	++	++	++	++	++	++	++
		Milieu (pH+)	++++	+++	+++	+++	+	+++	+++	+++	+++
		Diversity	+	++	+	+	+	+	++	++	+++
		Butyrate prod. (indirect)	+	++++	+			+			
		Inflammation	+++	+++	++++	+++	++	++	+++	+++	+++
		Leaky Gut	+++	+++	+++	++++	+	+++	+++	+++	+++
		Immunomodulation	++	+++	++	++	++++	++	++		+++
		C. difficile, PQ, PPO	+	+++	+	+	++	++++	++		++
		Candida	+	+	+	+	+++				+
		Histamine							++++		
		Neurotransmitter							+++	++++	++
		Toxins: p-cresol, IS		+							++++
		AhR agonists									++++

++++ = main indication | +++ = strong effect | ++ = moderate effect | + = slight effect | (blank) = no effect



No single probiotic adequately covers all 3 axes.
→ Select 2 complementary probiotics

Butyrate and diversity are special cases

For these two axes, a second probiotic does not automatically need to be added. Prebiotics can often achieve more here, because they specifically promote existing bacteria.

This applies particularly to butyrate production: suitable prebiotics supply substrate to butyrate producers and thus often promote the body's own butyrate production more strongly than probiotics.

Prebiotics: Targeted substrate therapy

For prebiotics, the same further development was as important to me as for probiotics. Until now, prebiotics have often been used mainly as dietary fiber for general support of the microbiome. This is reasonable in principle, but only partly exploits the possibilities of today's diagnostics.

If the test results show that Akkermansia or F. prausnitzii are reduced, diversity is low or butyrate production is insufficient, we can now ask much more specifically: Which substrate promotes exactly those bacteria or functions that need support in this patient?

This turns general fiber supplementation into targeted substrate therapy. And it is precisely here that prebiotics can, in some areas, be even more effective than probiotics, because we are not trying to supply additional bacteria, but specifically to nourish and expand existing, functionally important bacteria.

Akkermansia muciniphila

If *Akkermansia* is reduced, it is often more sensible to promote this organism specifically than to use another conventional probiotic. 2'-Fucosyllactose (2'-FL) is a particularly promising prebiotic approach here.

If bifidobacteria, lactobacilli or butyrate production are also to be supported at the same time, 2'-FL can usefully be combined with other substrates. Alternatively, *Akkermansia* can also be supplied as a pasteurized bacterium or postbiotic.

Faecalibacterium prausnitzii

F. prausnitzii, too, cannot simply be replaced like a conventional probiotic. With reduced levels, it therefore makes sense to specifically promote the existing *F. prausnitzii* with suitable substrates.

The new prebiotics table shows not only whether a product has a prebiotic effect, but also which bacteria and functions are particularly well supported.

Butyrate production

In reduced butyrate production, the difference between probiotics and prebiotics becomes particularly clear. Probiotics can support this axis, but suitable prebiotics often promote endogenous butyrate production considerably more strongly by specifically providing substrate to existing butyrate producers.

Butyrate can also be given directly, either in addition or as an alternative. The difference is important: direct butyrate replaces the metabolite – prebiotics promote the microbial capacity to produce butyrate itself.

Diversity

In reduced diversity, too, another probiotic is not automatically the best solution. Diversity does not arise from adding a few additional strains. What matters far more are diet, substrate variety and the conditions under which different bacteria can grow.

Therefore, with otherwise well-covered probiotic therapy, a diversity rating of only ++ can certainly be accepted if we support it specifically through diet and suitable prebiotics.

How do I read the prebiotics table?

The prebiotics table rates the various substrates according to several target parameters. Among other things, it shows how well *Akkermansia*, *F. prausnitzii*, bifidobacteria and lactobacilli are promoted, how strongly butyrate production is supported and how tolerability is to be assessed.

The ranking column is a helpful summary parameter. It is particularly useful when several goals are to be pursued at the same time – for example, increasing *Akkermansia* and *F. prausnitzii*, supporting bifidobacteria and lactobacilli at the same time, and achieving good tolerability.

However, the ranking does not replace the target axis. If, for example, *Akkermansia* is clearly the main problem, the prebiotic that supports this axis particularly well should be chosen first. Ranking, butyrate production and tolerability can then be included in the decision.

As a rule, prebiotics should be started at a low dose and increased gradually. Otherwise, bloating and other complaints may occur, especially in sensitive patients. In pronounced abnormal fermentation, SIBO (*small intestinal bacterial overgrowth*) or IMO (*intestinal methanogen overgrowth*), selection must be particularly careful.

For HMOs (*human milk oligosaccharides*), the degree of purity is also important. I recommend a purity of 98–99% wherever possible. Products with a purity of only about 90% may be less well tolerated, especially by sensitive patients, due to residual components.

Target axis first - then ranking, butyrate production and tolerability.

Prebiotics Table: Functional Effects on the Microbiome, Gut Milieu and Tolerability

Agent	Akkermansia	Bifidobacteria	F. prausnitzii	Lactobacilli	Butyrate production	Anti-inflammatory	Milieu	Fermentation ¹	Ranking	Lactose intol.	Fructose malab.
2'-Fucosyllactose	+++++	++	+++	–	(+)	+++	++	++	7.1	✓	✓
GOS	(+)	+++	–	+++	(+)	+	+++	++	7.7	✓ (pure)	✓
AXOS	+++	++	+++	(+)	++	+++	++	+++	7.8	✓	✓
Polydextrose	+++	+	+++	–	+++	+++++	+++	+++	7.9	✓	✓
Berberine	+++	–	(+)	–	+	+++	(+)	+++++	6.1	✓	✓
Inulin	(+)	(+)	–	–	(+)	(+)	(+)	–	5.2	✓	✗
FOS	(+)	+	–	(+)	(+)	(+)	+	–	5.2	✓	✗
Acacia fiber	(+)	(+)	–	–	(+)	(+)	(+)	++	5.6	✓	✓
Resistant starch	(+)	(+)	(+)	–	+	+	(+)	++	6.4	✓	✓
HMO mix (1 g/day)*	–	(+)	–	–	–	(+)	–	+++	5.2*	✓*	✓
HMO mix (6 g/day)*	+++++	+++	+++	(+)	+++	+++++	+++	+++	8.6*	✓*	✓
XOS	+++	+++	(+)	(+)	+	++	++	+	7.3	✓	✓
BG Prä AB&L (Mix)	+++++	+++	+++	+++	+++	+++++	+++++	+++	8.9	✓	✓

Important: Acidic stool pH

With a low or acidic stool pH in the sense of fermentative dyspepsia, the cause should be investigated first.

In this situation, I am initially cautious with probiotics and especially prebiotics. Only once fermentation has improved and the pH has normalized should targeted probiotic and prebiotic therapy be reassessed.

There are separate tables for children

For children, we deliberately did not want to simply adopt the adult table. An infant needs different therapeutic guidance than a school-age child or an adolescent. We have therefore created separate tables for the different age groups.

The basic rule is simple: the younger the child, the more age determines the selection. The older the child and the more specific the test results, the more important the specific functional axis becomes.

Infants 0–1 year

For infants, the infant table should always be used. The microbiome, intestinal barrier and immune system are still undergoing marked maturation. The focus here is therefore on typical early-childhood topics such as microbiome maturation, early dysbiosis, infant colic, risk of atopy/allergy, barrier function and immune maturation. The adult table is not a regular selection table for this age group.

Toddlers 1–3 years

Age-based preselection also remains important in toddlers. Common focuses are stabilization of the gut flora and milieu, susceptibility to infections, immune support, dysbiosis, atopy and barrier function. The toddler table should therefore be used first.

Children 4–12 years

From about four years of age, the logic changes. The children's table remains the first and simple guide. It covers many common clinical questions and saves the therapist from having to select straight away from the considerably larger adult table.

With increasing age, however, the specific indication becomes more important than the mere label "children's probiotic". If a clinically relevant axis – for example histamine, neurotransmitters, toxins or another specific functional change – is not adequately covered by the children's table, suitable preparations from the adult table can be used in addition. This requires an age-appropriate composition, dosage form and dosage.

Adolescents 13 years and older

In adolescents, the selection process increasingly aligns with adult logic. The adolescent table therefore serves mainly as a quick preselection for common topics such as stress, the gut-brain axis, IBS (irritable bowel syndrome) and histamine-related problems.

With differentiated microbiome or metabolome test results, the adult table can be included in the decision process earlier if it better reflects the relevant functional axes.

Here, too, it is important to me that the children's tables are neither rankings nor exhaustive product lists. They are intended to simplify selection and provide an age-appropriate preselection. For older children and adolescents, this preselection may be extended functionally if needed.

Do I now always have to work with the tables?

No. If you work well with our therapeutic flowchart at the beginning of the therapy section, you can continue to use it.

There you will already find probiotics and prebiotics for the four most important findings axes. The new tables are the next step if you want to individualize more or take additional axes into account.

We are not making therapy more complicated. We are giving you the opportunity to make it more targeted.

The tables are the transition to the probiotics engine

At the same time, the new system shows how complex a truly individual selection has now become. That is why we are working on a probiotics engine.

In the future, it will combine microbiome and metabolome test results with a short clinical questionnaire. This will make it possible to consider not only product groups, but individual probiotics with their strains, indication focuses, dosages and product matrices.

Our knowledge base now comprises around 80 probiotics for adults and about 30 preparations for infants, children and adolescents. If everything goes as planned, the engine should be available in a few months.

The next logical step

Today, what matters is no longer just which bacteria are present. Increasingly, what also matters is which functions they perform and which metabolites they produce.

This is exactly where the microbiome and the metabolome come together. And for me, this is exactly what gives rise to the next logical step: identifying functional disturbances and influencing them therapeutically in a targeted way.

We are not replacing what has been proven effective. We are using the additional diagnostic possibilities to make therapy more precise.

I hope the new tables will help you with this.

Warmest regards,
Burkhard Schütz

All Further Materials at a Glance

- [Information Sheet 1 – New Probiotic Therapy Tables – Why](#)
- [Information Sheet 2 – Practical Examples for Probiotic Selection](#)
- [Information Sheet 3 – Selecting Prebiotics in a Targeted Way](#)
- [Information Sheet 4 – Probiotics in Infants, Children and Adolescents](#)
- [FAQ – Probiotics Table for Adults](#)