Scientists re-classify one genus into twenty-five genera

The Lactobacillus genus contained over 250 species. New DNA-based analytical tools enabled scientists to see that the species historically grouped under Lactobacillus were very genetically diverse and did not adhere to nomenclature conventions. Applying the most current methods, a global group of scientists collaborated to divide this genus into groups of closely related species—which share certain physiological and metabolic properties—under new genus names.

New names for some prominent Lactobacillus probiotic species

<table>
<thead>
<tr>
<th>Former name</th>
<th>New name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactobacillus casei</td>
<td>Lacticaseibacillus casei</td>
</tr>
<tr>
<td>Lactobacillus paracasei</td>
<td>Lacticaseibacillus paracasei</td>
</tr>
<tr>
<td>Lactobacillus rhamnosus</td>
<td>Lacticaseibacillus rhamnosus</td>
</tr>
<tr>
<td>Lactobacillus plantarum</td>
<td>Lactiplantibacillus plantarum</td>
</tr>
<tr>
<td>Lactobacillus brevis</td>
<td>Levilactobacillus brevis</td>
</tr>
<tr>
<td>Lactobacillus salivarius</td>
<td>Ligilactobacillus salivarius</td>
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<tr>
<td>Lactobacillus fermentum</td>
<td>Limosilactobacillus fermentum</td>
</tr>
<tr>
<td>Lactobacillus reuteri</td>
<td>Limosilactobacillus reuteri</td>
</tr>
</tbody>
</table>

All new genera proposed for this group begin with the letter “L”, so the abbreviated form of genus/species – such as L. rhamnosus – remain unchanged. Species names and strain designations have not changed.

The new groupings may facilitate our understanding of common mechanisms that could mediate probiotic health benefits, because species that are more closely related (and therefore are more likely to share physiological traits) are grouped under the same genus.

What do the changes mean for scientists?

• New publications on Lactobacillus strains should use the new genus names. You may need to provide a brief explanation of the changes to editors or reviewers.
• When searching the scientific literature for a specific strain, it may be necessary to search under both the old genus name and the new genus name.

These probiotic Lactobacillus have not changed names:
- Lactobacillus acidophilus
- Lactobacillus delbrueckii subsp. bulgaricus (aka Lactobacillus bulgaricus)
- Lactobacillus crispatus
- Lactobacillus gasseri
- Lactobacillus johnsonii
- Lactobacillus helveticus

These Lactobacillus taxonomic changes are described in the following scientific paper: Zheng et al. 2020. A taxonomic note on the genus Lactobacillus: Description of 23 novel genera, emended description of the genus Lactobacillus Beijerinck 1901, and union of Lactobacillaceae and Leuconostocaceae. IJSEM. https://doi.org/10.1099/ijsem.0.004107

Lactobacillus timeline

1901 Lactobacillus first described
1935 Lactobacillus casei Shirotá – one of the earliest commercial probiotics – first sold
1975 35 Lactobacillus species described to date
1982 DNA-based approach to taxonomy started with 16S rDNA sequencing
1983 Lactobacillus rhamnosus GG isolated by Goldin and Gorbach
1987 Lactobacillus reuteri species patented
1995 67 Lactobacillus species described to date
2003 First Lactobacillus genome sequence – L. plantarum WCFS1
2005 147 Lactobacillus species described to date
2015 Phylogenic analysis based on genomic DNA used to establish taxonomic groupings of microbes
2015 265 Lactobacillus species described to date
2020 Lactobacillus genus taxonomy updated, now composed of 25 genera

You can find new Lactobacillus names easily here: http://lactobacillus.uantwerpen.be

THE BIG BREAKUP OF
Lactobacillus

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