When a patient takes antibiotics, these will also kill part of their normal microbiota, resulting in a microbial imbalance or dysbiosis.\(^1\) (Figure 1)

Antibiotic-associated diarrhoea (AAD) is the most common gastrointestinal complication following antibiotic use, especially for broad-spectrum antibiotics.\(^2\)

Its rate of occurrence varies between 5-39%, depending on the patient population and the type of antibiotic given.\(^3\)

AAD can range in severity from mild diarrhoea to life-threatening pseudomembranous colitis.\(^4\)

*Clostridium difficile* (*C. difficile*) can be the cause in 15-39% of the AAD cases of hospitalised elderly patients.\(^5\)

After a first infection with *C. difficile*, its rate of recurrence ranges from 8-50%\(^6,7\) with a risk of mortality of nearly 7%.\(^8,9\)

Probiotics can reduce the risk of developing AAD by 42%, and by 64% in the case of *C. difficile* associated diarrhoea in adults.\(^10,11\)

In children, probiotics can reduce the risk of AAD by 54%.\(^12\)

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**Figure 1** Antiobiotic-induced gut dysbiosis.
Clinical and basic research demonstrate that administration of antibiotics together with probiotics may have beneficial effects. Several studies demonstrate that multi-strain probiotic preparations are more likely to be effective in counteracting the growth of pathogens when compared with single strains. Bio-Kult’s probiotic strains have the capacity to inhibit the growth of C. difficile. In a double blind, randomised, placebo controlled clinical trial Bio-Kult strains have demonstrated a statistically significant reduction of AAD. Clinical and basic research demonstrate that administration of antibiotics together with Bio-Kult strains represent an opportunity for the healthcare sector to reduce the burden of AAD and C. difficile infection.

**Figure 1** Bio-Kult probiotics strains inhibit the proliferation of C. difficile.

![Inhibition of C. difficile by Bio-Kult probiotics strains and mixtures](chart)

**Figure 2** Bio-Kult's Bacillus subtilis strain (PXN21) has the capacity to attenuate the effects of C. difficile infection (CDI) and increases the survival experimentally infected mice.

![Bio-Kult Probiotic Strain/Mixes](chart)

**Figure 3** Bio-Kult’s Bacillus subtilis strain (PXN21) has the capacity to attenuate the effects of C. difficile infection (CDI) and increases the survival experimentally infected mice.

**Figure 4** Bio-Kult strains have also demonstrated, in the context of a randomised controlled clinical trial, to effectively reduce the risk of developing AAD and other antibiotic associated side effects.

![Delivery of PXN 21 spores pre and post CDI](chart)

**Side Effect Rates (%)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Diarrhea (p &lt; 0.05)</th>
<th>Nausea and Vomiting (p &lt; 0.05)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two Antibiotics + PPI</td>
<td>24.24</td>
<td>6.06</td>
</tr>
<tr>
<td>Two Antibiotics + Probiotic</td>
<td>27.27</td>
<td>6.06</td>
</tr>
</tbody>
</table>

**References:**
### LIVE BACTERIAL CULTURES

<table>
<thead>
<tr>
<th>Strain</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacillus subtilis</td>
<td>PXN 21</td>
</tr>
<tr>
<td>Bifidobacterium bifidum</td>
<td>PXN 23</td>
</tr>
<tr>
<td>Bifidobacterium breve</td>
<td>PXN 25</td>
</tr>
<tr>
<td>Bifidobacterium infantis</td>
<td>PXN 27</td>
</tr>
<tr>
<td>Bifidobacterium longum</td>
<td>PXN 30</td>
</tr>
<tr>
<td>Lactobacillus acidophilus</td>
<td>PXN 35</td>
</tr>
<tr>
<td>Lactobacillus delbrueckii ssp. bulgaricus</td>
<td>PXN 39</td>
</tr>
<tr>
<td>Lactobacillus casei</td>
<td>PXN 37</td>
</tr>
<tr>
<td>Lactobacillus plantarum</td>
<td>PXN 47</td>
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<tr>
<td>Lactobacillus rhamnosus</td>
<td>PXN 54</td>
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<tr>
<td>Lactobacillus helveticus</td>
<td>PXN 45</td>
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<tr>
<td>Lactobacillus salivarius</td>
<td>PXN 57</td>
</tr>
<tr>
<td>Streptococcus thermophilus</td>
<td>PXN 66</td>
</tr>
</tbody>
</table>

### OTHER INGREDIENTS

- Cellulose (bulking agent)
- DHA + EPA Powder: >1mg per sachet (Omega-3 fatty acid from fish)
- Vitamin D₃: 2.5mcg per sachet (50% of Nutrient Reference Value)
- Preplex® (fructooligosaccharide (FOS) and gum acacia)

### TOTAL VIABLE COUNTS (CFU)

<table>
<thead>
<tr>
<th>Capsules/Sachets</th>
<th>CFU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capsules per day</td>
<td>2 x 10⁹</td>
</tr>
<tr>
<td>Per sachet</td>
<td>1 x 10⁹</td>
</tr>
</tbody>
</table>

### USAGE GUIDELINES

- **Adults:** Take 4 capsules per day (2 capsules twice a day) during the antibiotic treatment and for at least 2 weeks after completion of the antibiotic course. Children under 12 y.o. half adult dose.
- **Children under 12 y.o.** ½ -1 sachet once a day mixed with milk, water or food (start with ¼ of a sachet for babies <6 months) during the antibiotic treatment and for least 2 weeks after completion of the antibiotic course.
- **Antibiotic treatment:**
  - For at least 2 weeks after completion of the antibiotic course.
- **Additional information:**
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