Probiotic formulation for antibiotic-associated side-effects

Ecologic® AAD formulation inside

Ecologic® AAD has been developed by Winclove and the Maastricht University Medical Centre (MUMC) the Netherlands. It is specifically composed to prevent and restore the antibiotic-induced disturbances of the microbiota, level 1, (figure 1) and subsequently the risk of antibiotic-associated side-effects, such as AAD.

Probiotic strains in Ecologic® AAD have been primarily selected for their capacity to inhibit Clostridium difficile and other AAD-related pathogens.

The selected strain combination from the Ecologic® Barrier formulation:

- *Bifidobacterium bifidum* W23
- *Bifidobacterium lactis* W51
- *Enterococcus faecium* W54
- *Lactobacillus acidophilus* W37
- *Lactobacillus acidophilus* W55
- *Lactobacillus paracasei* W20
- *Lactobacillus plantarum* W62
- *Lactobacillus rhamnosus* W71
- *Lactobacillus salivarius* W24

Figure 1: Ecologic® AAD is a multispecies probiotic developed to prevent intestinal microbiota disturbances (level 1) and hereby antibiotic-associated side effects such as AAD.
Probiotic formulation for reduction of antibiotic-associated side effects

Bacterial infections are often treated with antibiotics. It is generally known that antibiotic intake can cause a marked disturbance of the intestinal microbiota, as antibiotics do not only affect the targeted pathogens, but the indigenous microbiota as well.\(^1\)

A disturbance of the intestinal microbiota can lead to the overgrowth of potential pathogens, which may result in the development of antibiotic-associated diarrhea (AAD) (figure 2). The incidence of AAD ranges from 5-39%.\(^2\)\(^3\)

AAD can be divided into two types: non-specific AAD which is usually mild and Clostridium difficile associated diarrhea (CDAD), which can lead to severe and life threatening pseudomembranous colitis.\(^1\) It was widely assumed that this disturbance of the intestinal microbiota was short-term, but nowadays it is accepted that antibiotics can profoundly affect the intestinal microbiota over a long period of time.\(^4\) Moreover, there is growing evidence that these antibiotic induced disturbances of the microbiota play an important role in a multitude of disorders such as irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), allergy, obesity and colorectal cancer.\(^5\) Therefore, preventing or restoring this disturbance is of great importance. The medical world is just now starting to accept that even if AAD is not present antibiotic treatment can cause a marked and prolonged disturbance of the microbiota leading to health issues in the long term. Ecologic® AAD has shown to be effective in preventing AAD and in restoring antibiotic-induced microbiota perturbations.\(^5\)\(^6\)

Figure 2: Antibiotics can have a profound impact on the intestinal microbiota. It causes temporary decrease in diversity leading to loss of colonization resistance and thereby overgrowth of potential pathogens like C. difficile.

Clinical support

Ecologic® AAD has been tested in the MUMC in a randomized, double-blind placebo-controlled trial with healthy volunteers taking amoxicillin.\(^5\) The trial showed that Ecologic® AAD is able to significantly reduce the risk of diarrhoea-like defecation (figure 3). It was also shown that the intestinal microbiota of subjects in the probiotic group was restored to the pre-antibiotic state faster
than the intestinal microbiota of the placebo group. The results therefore suggest that restoration of the intestinal microbiota is one of the important mechanisms determining the efficacy of probiotics in AAD (figure 4). Ecologic® AAD was also able to stimulate the production of cytokine secretory IgA (sIgA), an important immunoglobulin for the general defence against pathogens.

This result has been confirmed in a user test in Austria with 199 people. The incidence of AAD normally ranges between 5-39%.

Hospitalised patients on antibiotics received Ecologic® AAD, resulting in a significantly lower incidence of AAD: less then 1% in the entire study group.

Furthermore, a retrospective case report series of 10 CDI patients, of whom 5 experienced recurrent CDI, has been published. All patients received, besides antibiotics before the treatment of CDI, two times daily Ecologic® AAD, which resulted in complete recovery.

![Figure 3: Diarrhea-like defecation occurred significantly less in the Ecologic® AAD group compared to the placebo group.](image)
Figure 4: After day 35 there is a significantly faster recovery to the pre-antibiotic state of microbiota in the Ecologic® AAD group compared to the placebo group.

Ecologic® AAD publications


Safety insurance

The use of oral probiotics has been well researched in many different (incl. vulnerable) patient populations, including infants, elderly people and immunocompromised patients. The general conclusion is that there are no safety risks for the studied bacterial strains in the dosages that were used in the studies. Caution is recommended in a number of highly vulnerable patient populations, such as oncology patients with severe leukopenia or mucositis. Probiotics use in acute pancreatitis is contraindicated. Read More about Safety... [2]

World Wide availability

The research formulations of Ecologic® are not sold as consumer products. However our worldwide business partners [3] offer a selection of the formulations their own branded product(s). Thus the specific bacterial compositions can be found in different products around the world.
References

1. a, b, Pillai A, Nelson R. Cochrane Database Syst. Rev. 2008; 1:CD004611

Formulation ingredients

Bacterial strains

- Bifidobacterium bifidum W23
- Bifidobacterium lactis W51
- Enterococcus faecium W54
- Lactobacillus acidophilus W37
- Lactobacillus acidophilus W55
- Lactobacillus paracasei W20
- Lactobacillus plantarum W62
- Lactobacillus rhamnosus W71
- Lactobacillus salivarius W24

Usage

Dosage

Dosage used in studies: 10 grams, 2 x 5 grams

Daily CFU

Dissolve in

luke water or dairy

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