

1. Introduction

“I have had UC for 26 years and used to feel permanently bloated, had awful wind and a very ‘gurgling’ stomach. About every two weeks, I used to get bad stomach ache and the runs. I started taking a probiotic milk drink, and felt the benefits after 3 days. Now I feel more or less normal. While on holiday and unable to obtain the probiotic drink, the above problems recur - fortunately vanishing within a few days of starting to take it again.”

The purpose of this book is to explain how some bacteria, taken in food or as supplements, can probably help reduce the severity of Crohn’s Disease or Ulcerative Colitis (UC). The products that contain these beneficial bacteria are called **probiotics**, and the bacteria that have health-improving effects are called probiotic bacteria.

The probiotic bacteria have an effect upon the microflora (the billions of bacteria that live in the intestines of every human being, also known as gut bacteria). The microflora, through their normal living processes, have a range of effects on the health of their host. These effects may be negative or positive depending on a range of factors, including the type and numbers of bacteria that constitute the microflora at a particular time.

The value of probiotics is that, by being consumed as food or as supplements, they can alter the microflora and increase the likelihood that the overall effect of the gut bacterial processes is health improvement rather than health deterioration.

The health improvements that arise from taking probiotics affect those diseases influenced by the microflora, and prominent among those diseases are Crohn’s and UC.

The effect of probiotics on Crohn's and UC

Much is still unknown about the bacteria in the human gut, and the exact causes of Crohn's and UC are not yet known. Despite this incomplete picture, however, there is growing scientific evidence that probiotic bacteria may constitute a significant breakthrough in the treatment of Inflammatory Bowel Disease (IBD), which is the collective name used for UC and Crohn's.

Scientific evidence suggests that by increasing the numbers of these beneficial bacteria in your small intestine and colon you may be able to:

- reduce the severity of a flare-up,
- lengthen the time that the disease stays in remission, and
- strengthen your immune system.

Probiotics may enable people with IBD to reduce prescribed drugs and, as a consequence, the side effects caused by these drugs. Furthermore, by reducing the severity of the disease, it may be possible to postpone surgery or even avoid it altogether.

Perhaps this sounds too good to be true; that here is yet another writer making extravagant claims and exploiting people's anxieties about a very unpleasant long-term condition. Nevertheless, this book is based on scientific evidence, written in ordinary English, and it should enable you to judge for yourself the evidence in favour of probiotics.

This book also explains the scientific theories of how probiotic bacteria appear to work, and provides general guidance on probiotic products.

There is also information about **prebiotics**, which are types of soluble carbohydrate that encourage the growth of beneficial bacteria. This word will be written as '*prebiotics*' in this book, with an italicized prefix, to make it easier to distinguish from 'probiotics'.

Reasons for reading this book

If you have IBD, you may not want to spend time reading a book about probiotics; instead you may wish to start taking probiotics and see whether they have any positive effects. You may even have tried probiotics already.

I would strongly recommend reading this book for three reasons:

- IBD can be a serious condition and it is important to work with your doctor on this, if at all possible. The more knowledge you have about probiotics, the more confident you will be in speaking with your doctor and other members of the healthcare team;
- Not all probiotic bacteria will be effective with UC and Crohn's and it will be helpful to know what evidence there is about specific species and strains;
- Probiotic products vary considerably in their form and content, particularly in the numbers of live bacteria contained. This book gives information on the main factors you should be looking for in a suitable product.

How reliable is the information?

The information on probiotics contained in this book is based on reliable research as recorded in scientific journals and specialist texts.

Sources of this information are given in a list of references towards the end of the book. If you or your doctor wish to investigate a particular aspect in greater detail, there are some leads to follow.

In reporting on research into probiotics, I have concentrated on major research journals, mainly in the fields of gastroenterology, microbiology and nutrition. Also, in clinical trials I distinguish between small studies and randomised controlled trials (RCTs).

RCTs involve large numbers of participants and more statistical techniques to help ensure that the results are a true record of cause and effect. Also, these studies involve control groups; one group of participants receives the treatment and a similar 'control' group remains untreated, enabling the results to be more accurately assessed for bias.

If a reported study has a low number of participants or lacks a control group, I try to point this out. This is so that you are in a better position to judge the strength of the evidence.

Where do bacteria fit into the picture of IBD?

The continuing or recurrent inflammation of the intestines of people with UC and Crohn's is believed to involve several factors. Among these are genes, the malfunctioning of the immune system and the

microflora. It is not known, however, exactly how these elements interact to cause IBD.

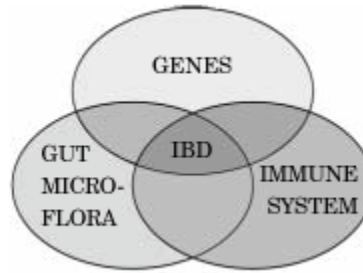


Fig 1 - Three main factors involved in IBD

In the treatment of IBD, prescribed drugs have helped significantly to bring the disease under control. In particular, drugs have reduced the risk of death to a very low level (something that used to be a real threat in severe cases). But these drugs have their limitations (they do not work on everyone with IBD; they may have side effects), and so the search for improved treatments continues.

Diet is increasingly considered an integral part of IBD care. For example, liquid elemental drinks are given to teenagers to improve their weight and possibly reduce the need for strong drugs; and some adults may have reduced symptoms by removing certain foods from their diet if they are intolerant to them.

Until relatively recently, the microflora were thought to be of little importance in the cause of IBD, and, therefore, alteration of the types of bacteria that make up the microflora had not been considered seriously as a treatment. Over the last twenty years, however, enough evidence has been obtained to suggest that not only are microflora important for the continuation of the disease, but also that certain types of beneficial bacteria may be used in treatment.

In summary, while much remains unknown about IBD, it is increasingly clear that gut bacteria are a factor in the disease and that probiotic bacteria may be able to play a role in breaking the cycle of IBD inflammation. The role of these probiotic bacteria will be explained in this book.

Aren't all bacteria harmful?

The popular image of bacteria is as a disease-causing enemy that should be killed at every opportunity. Each home contains anti-bacterial products to keep disease at bay.



Fig 2. Household anti-bacterial products

Probiotic products contain millions, even billions, of bacteria, so it is not unreasonable to question whether probiotics are safe.

There are bacteria that are responsible for many severe infectious diseases such as tuberculosis, diphtheria, cholera, typhoid, tetanus and leprosy. But there are many different types of bacteria; some are harmful to humans, and some are helpful. Most are neutral, but may be harmful depending on particular circumstances.

The bacteria used in probiotics, mostly those that produce lactic acid, are very safe but no bacterium is completely safe. There is always the possibility, no matter how slight, that any bacteria will behave in an unexpected and harmful manner.

However, probiotic bacteria very rarely cause harm, and it is virtually unknown for harm to come from probiotic products.

The subject of safety is covered more fully in chapter 5, as well as in Appendix 2.

Structure of the book

The structure of this book has been planned to help people with Crohn's or UC, together with their spouses, partners, close relatives or friends, to understand the option of probiotics (and *pre*biotics).

Each chapter is introduced by a quote from a person with IBD who takes probiotics regularly. The intention is to share personal experiences and show that there are people with IBD who appear to benefit from probiotics. The quotes were drawn from replies to a notice in the newsletter of the National Association for Colitis and Crohn's Disease requesting experiences with probiotics, good, bad, or indifferent'. Of the 33 replies, two people doubted they had had any benefit and another stopped taking a probiotic milk drink after she developed an allergic reaction (blotchy red skin and severe itching). All the rest were very positive about the probiotics they use. One should not assume, however, that all products that describe themselves as probiotic will necessarily benefit a person with IBD.

Chapter 2 looks at the history of probiotics. It shows that:

- foods produced with the use of bacteria have been consumed safely for thousands of years;
- scientific support for the idea of consuming beneficial bacteria (in the form of fermented milks) to improve health is about a hundred years old;
- fermented milks lost their popularity following criticism of unsubstantiated claims; and
- the idea of probiotics, the modern term for beneficial bacterial products, became very popular over the last decade of the twentieth century.

It is to be hoped that Chapter 2 will provide some reassurance that probiotics are not merely a passing fad and that they have historical substance.

Chapter 3 describes how IBD is believed to develop, including the role of bacteria and the importance of the immune system. This should make it clear why finding a cure has proved so elusive, and how bacteria might play a very important role. This chapter also refers to an Appendix 1, which explains the body's defence systems more fully.

Chapter 4 looks in some detail at the evidence for the use of probiotics in IBD. The method used is to draw upon eight research reviews' by leading experts, and report on the key studies.

Chapter 5 looks at specific probiotic bacteria (and yeasts) and assesses, with each type, what evidence there is for any beneficial effect. If you are considering the ingredients of a probiotic product, the information provided in this chapter will enable you to check whether any reliable scientific evidence backs up the listed bacteria.

The following two chapters, 6 and 7, look at *pre*biotics. These are non-digestible food ingredients that provide nutrients for beneficial bacteria. When *pre*biotics are consumed, the desirable bacteria that are already present in the intestines tend to grow in numbers, at the expense of harmful bacteria. The *pre*biotic approach to manipulating the microflora is therefore different from the probiotic approach (working on existing gut bacteria, rather than adding new ones). Probiotic products can also contain *pre*biotics, to help the probiotic bacteria to grow within the human intestine.

Chapter 8 describes how probiotics and prebiotics may help other intestinal conditions, which may also affect people with IBD.

The final chapter, 9, contains questions and answers, which reinforce the main points of the book and discusses practical matters. Information is also provided about possible future developments.

At the end of each chapter there is a summary of the main points, to help the reader absorb and retain the information provided.

Further information, and a list of IBD Associations in different countries, can be found on the publisher's web site (www.prentice-publishing.co.uk).

Chapter summary

- Probiotics, containing beneficial bacteria, can probably help reduce the severity of Crohn's and UC.
- The information in this book will help you to discuss probiotics with your doctor, learn about different species and strains of probiotic bacteria, and know what to look for when selecting a probiotic product.
- The book is based on scientific evidence, and is written in straightforward English for the general reader.
- Along with genes and the immune system, the microflora (gut bacteria) are involved in IBD inflammation. Probiotics aim to alter the microflora so that the inflammation is reduced, and periods of remission extended.
- *Pre*biotics alter the microflora by providing food that is favoured by beneficial bacteria that are already living in the gut.
- Unlike many other types of bacteria, probiotic bacteria (mostly lactic acid producers) are very safe.
- The list of chapters is best read in numerical order; however, if you wish to read them out of order, it makes sense to read chapters 4 and 5 together, and 6 and 7 together.