



## What is Beta-Glucan (1-3),(1-6) Linkage?

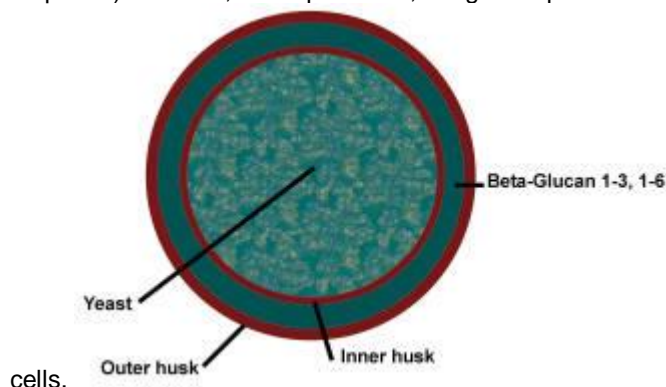
There are now a number of beta-glucan products on the market and increasingly questions are being asked about what type to take.

There is certainly a degree of confusion regarding various types of soluble and oral products and their uses, as well as the purity or linkage in various products.

The general rule is that oral is best - because this is how beta-glucans were absorbed when they were available in our natural diet and, provided there is a reasonable proportion of undamaged beta-glucan in the product, then quantity is the issue not purity.

Here is an explanation:

Beta-Glucan 1-3, 1-6 is a specific Beta-Glucan that has an immuno-modulatory effect (awakens and enhances an immune response) because, in simple terms, it tags receptors on immune response cells such as Macrophages and Langerhans



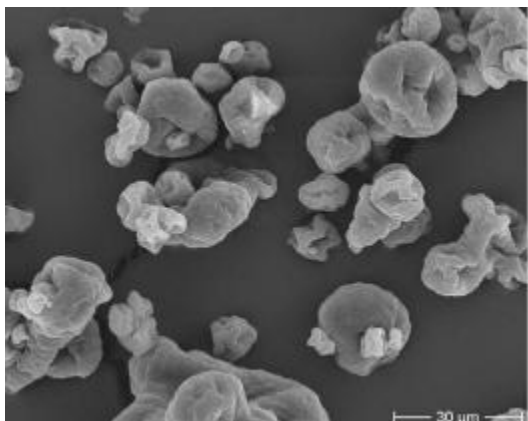
cells. any defense against pathogens and viruses.

These cells then rally the innate immune system to maximise

Elsewhere on this site are details of the significant amount of scientific research and testing that has taken place with beta-glucan but one area that is less well understood is the effect that different types of beta-glucan 1-3, 1-6 can have. The areas of uncertainty relate to solubility and purification.

As dry matter derived from *Saccharomyces Cerevisiae* (bakers or brewers yeast) it is not normally possible to dissolve this in liquid. Apparently however solutions have been created in America and Japan - the latter using beta-glucan from various types of polypore mushrooms (credited with immune benefits by ancient oriental medicine prescriptions). These were developed as injectables but are generally accepted as being less effective than most types of oral beta-glucan taken as a tablet or capsule.

Yeast is not very effective as an immuno modulator as it needs to be taken in significant quantities for any beta-glucan 1-3, 1-6 to be available. As can be seen from the diagram above the beta glucan is sealed in the husk of the yeast so only broken yeast cells would yield beta-glucan in nature.



The yeast needs to be purified - firstly to remove all the yeast. Proper beta-glucan 1-3, 1-6 will have no yeast and accordingly is entirely suitable for people prone to yeast allergies. See the picture left of purified yeast husks.

This is a critical process as over purification can damage the receptors on the beta-glucan leaving only an ineffective glucose suspension. Tests have shown in vitro that highly purified beta-glucan can be less effective than beta-glucan that has more of the mannan (polymannose) present (<http://www.beta-glucan.co.uk/comparison.htm>) .

Linkage\* is the amount of beta-glucan 1-3,1-6 that has been separated from the mannan (polymannose) and 75 - 80% is about the maximum linkage it is possible to extract without damaging the receptors and diminishing the immunological benefits. (\* The content that is completely beta-glucan 1-3, 1-6; in other words the purity).

Tests have shown that beta-glucan with linkage of 45% or so is particularly effective; this is probably due to the benefits of the mannan as well as the undamaged beta-glucan 1-3,1-6. Some practitioners insist that higher yield beta-glucans are best when used in conjunction with other therapies and at very high doses.

In the event medium linkage beta-glucans seem prudent for daily use and sustained high doses. High linkage may be useful for intensive treatment in combination with other therapies that are damaging to the immune system.

There is no evidence that lower linkages are less effective than a comparable volume of high linkage beta-glucan - in fact the contrary could be the case.