



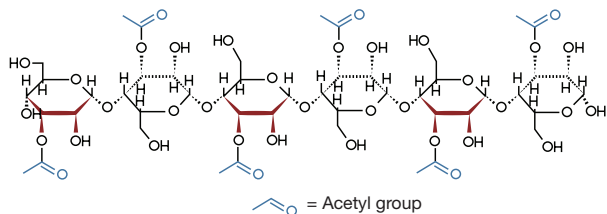
# About Acemannan



## Insights From Mannatech's R&D Department

### What Is Acemannan?

According to the Chemical Abstract Service and the United States Adopted Names Council, Acemannan is a highly acetylated, B1,4-linked mannan with the high molecular weight (MW) of 1-2 million daltons. Acemannan comes from aloe vera, the common name for the *Aloe barbadensis* Miller plant, prized by cultures worldwide for its ability to support human health.



### Tell Me More About Aloe Vera

Aloes originated in Africa, and their uses date back roughly 6,000 years. The Egyptian queens Nefertiti and Cleopatra used aloes as beauty aids, and aloes were widely used by ancient physicians, including Dioscorides, Hippocrates, Pliny the Elder, Celsus and Galen. The first detailed description of aloe's health benefits was in the Ebers Papyrus, written about 1550 BC in Egypt.

The thick, blade-shaped aloe vera leaf is comprised of an outer "skin" and an inner leaf thick, viscous "gel". The skin contains a bitter yellow latex material containing aloins, an OTC laxative drug. The gel is roughly 99% water but it also contains amino acids, minerals, vitamins, small amounts of galactans and pectins and, most important to the plant's benefits for health, "acetylated" (i.e., with COCH<sub>3</sub> groups attached) glucomannans and mannan polysaccharides, including Acemannan.\*



### Tell Me More About Aloe Polysaccharides

Multiple polysaccharides can function as "biological response modifiers", significantly influencing many aspects of human immunologic function. Of great scientific interest is the attributes of these biologically important molecules that affect their activity and/or potency. *In vitro* (test tube) and *in vivo* (animal/human) testing suggest that the most potent aloe gel preparations have high MW polysaccharides enriched in mannose, like Acemannan.

Many people keep an aloe plant in their homes so they have fresh gel to help relieve minor skin irritations and burns. Aloe gel's historical and topical benefits have driven the development of more convenient and potent dried preparations. While highly technical processing and careful drying can retain acetylated mannan polysaccharides, there is tremendous variability in the chemistry of processed aloe gel products, reflected in their widely ranging polysaccharide and sugar content, MW and degree of acetylation. Such variability can be attributed to the geographic location where plants are grown, climate and the employed gel extraction methodology. Acemannan can be lost with improper gel processing, such as with the enzyme cellulase, leaving behind minor low MW galactans and pectins. Aloe products claiming to contain acemannan without a molecular weight of 1-2 million Daltons cannot be, by definition, Acemannan.

† Natural Aloe Costa Rica routinely tests and confirms that the polysaccharides in Manapol contain a standardized amount of Acemannan. An analysis conducted by an independent research center used size-exclusion chromatography (SEC) to determine that the MW of the polysaccharides in Acemannan is 1.3 million daltons.

**\* These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.**

During the past decades there have been various human scientific studies on Acemannan from Aloe gel extract that show supporting benefits for blood glucose, blood lipid and immunological support. Acemannan, specifically Manapol, which is used in various Mannatech products like our Ambrotose product line, just finished a human, double blind clinical trial in 2020 showing its effects on supporting immune system modulation and supports the body's response to cellular adversity.

### Tell Me About Manapol

Manapol is a pure aloe vera gel extract that is abundant in a wide MW range of acetylated, mannose-rich polysaccharides, including a standardized amount of Acemannan.† A high quality aloe vera gel product should contain less than 10 ppm aloins. Manapol contains <10 ppm aloins.

Manapol powder comes from aloe plants that were bred specifically for a higher Acemannan content and grown by Natural Aloe Costa Rica on mineral-rich volcanic soil. Natural Aloe Costa Rica uses a proprietary enzyme-free processing method to concentrate Acemannan in Manapol.

There is no patent on Manapol. Other companies claiming to



have such a patent are being untruthful. Mannatech is the only company that has the exclusive rights to use Manapol powder, the most potent and purest source of Acemannan possible. The importance of Mannatech's commitment to a standardized amount of 1 million dalton minimum MW Acemannan has been validated by numerous published human clinical studies demonstrating the benefits of our Ambrotose products.\*

