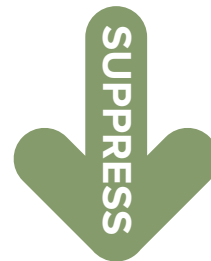


The body's initial immune *response*¹ to an insult is to release a cascade of *pro-inflammatory cytokines*.²

Cytokines such as interferon, interleukin, and certain growth factors are secreted by immune system cells and **affect the body systemically**.³ Although these cytokines can be beneficial, quite often they **persist to the detriment of our bodies**.⁴ **The body's challenge is to balance the immune response to limit prolonged cytokine secretion while battling the insult**.⁵ Prolonged secretion of these cytokines can result in prolonged inflammation, impairment to healing and a **propensity toward additional insults**.⁶ Immunomodulation is the adjustment of the immune response to achieve a **desired**⁷ level of **balance**.⁸ Aloe vera has been shown to be a potent modulator to the **immune response function**.⁹

OVERACTIVE:
Inflammatory
Response



BALANCE

SUPPORT

UNDERACTIVE:
Open to
Insult



How the body balances the immune response¹⁰

Acemannan,¹¹ the biologically active component of BiAloe® has been shown to be a powerful immune modulatory agent in multiple studies, including studies in human subjects. The Acemannan in Aloe has to have the proper range of molecular weight and the right chemical composition in order to be **biologically active**.¹² Analysis shows that the composition of low and high molecular weight fractions can vary widely depending upon **manufacturing technique**.¹³ **BiAloe® is the most immunomodulatory bio-available product on the market.**

BiAloe

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Bibliographic references

- 1 – Dinarello CA. Role of pro- and anti-inflammatory cytokines during inflammation: experimental and clinical findings. *J Biol Regul Homeost Agents*. 1997;11(3):91–103. An inflammatory response is essential for the development of adaptive immunity-immunogenicity and immunotoxicity
<https://www.sciencedirect.com/science/article/pii/S0264410X16307381?via%3Dihub>
- 2 – Dinarello CA. Role of pro- and anti-inflammatory cytokines during inflammation: experimental and clinical findings. *J Biol Regul Homeost Agents*. 1997;11(3):91–103.
<https://pubmed.ncbi.nlm.nih.gov/9498158/>
- 3 – Becher B, Spath S, Goverman J. Cytokine networks in neuroinflammation. *Nat Rev Immunol*. 2017;17(1):49–59. doi:10.1038/nri.2016.123.
https://pubmed.ncbi.nlm.nih.gov/27916979/?from_term=%28pro-inflammatory%29+AND+%28cytokines%29&from_sort=&from_pos=5
- 4 – Su F, Bai F, Zhang Z. Inflammatory Cytokines and Alzheimer's Disease: A Review from the Perspective of Genetic Polymorphisms. *Neurosci Bull*. 2016;32(5):469–480. doi:10.1007/s12264-016-0055-4
https://pubmed.ncbi.nlm.nih.gov/27568024/?from_term=%28pro-inflammatory%29+AND+%28cytokines%29&from_sort=&from_pos=9
- 5-Channappanavar R, Perlman S. Pathogenic human coronavirus infections: causes and consequences of cytokine storm and immunopathology. *Semin Immunopathol*. 2017;39(5):529–539. doi:10.1007/s00281-017-0629-x
https://pubmed.ncbi.nlm.nih.gov/28466096/?from_term=%28cytokine%29+AND+%28storm%29&from_sort=&from_pos=2
- 6 - Rea IM, Gibson DS, McGilligan V, McNerlan SE, Alexander HD, Ross OA. Age and Age-Related Diseases: Role of Inflammation Triggers and Cytokines. *Front Immunol*. 2018;9:586. Published 2018 Apr 9. doi:10.3389/fimmu.2018.00586
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5900450/>
- 7 - Batista-Duharte A, Martínez DT, Carlos IZ. Efficacy and safety of immunological adjuvants. Where is the cut-off?. *Biomed Pharmacother*. 2018;105:616–624. doi:10.1016/j.biopha.2018.06.026
https://pubmed.ncbi.nlm.nih.gov/29894962/?from_term=%28immunomodulation%29+AND+%28balance%29&from_sort=&from_pos=5
- 8 -Donnarumma G, Paoletti I, Fusco A, et al. β -Defensins: Work in Progress. *Adv Exp Med Biol*. 2016;901:59–76. doi:10.1007/5584_2015_5016
https://pubmed.ncbi.nlm.nih.gov/26864271/?from_term=%28immunomodulation%29+AND+%28balance%29&from_sort=&from_page=2&from_pos=10
- 9 – Liu C, Cui Y, Pi F, Cheng Y, Guo Y, Qian H. Extraction, Purification, Structural Characteristics, Biological Activities and Pharmacological Applications of Acemannan, a Polysaccharide from Aloe vera: A Review. *Molecules*. 2019;24(8):1554. Published 2019 Apr 19. doi:10.3390/molecules24081554
<https://pubmed.ncbi.nlm.nih.gov/31010204/>
- 10 – Newton AH, Cardani A, Braciale TJ. The host immune response in respiratory virus infection: balancing virus clearance and immunopathology. *Semin Immunopathol*. 2016;38(4):471–482. doi:10.1007/s00281-016-0558-0
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4896975/>
- 11 - Minjares-Fuentes R, Femenia A, Comas-Serra F, Rodríguez-González VM. Compositional and Structural Features of the Main Bioactive Polysaccharides Present in the Aloe vera Plant. *J AOAC Int*. 2018;101(6):1711–1719. doi:10.5740/jaoac-int.18-0119
https://pubmed.ncbi.nlm.nih.gov/29895349/?from_term=%28%28aloe%29+AND+%28vera%29%29+AND+%28immunomodulation%29&from_sort=&from_pos=3&from_exact_term=%28%28aloe%29+and+%28vera%29%29+and+%28immunomodulation%29
- 12 – Im SA, Oh ST, Song S, et al. Identification of optimal molecular size of modified Aloe polysaccharides with maximum immunomodulatory activity. *Int Immunopharmacol*. 2005;5(2):271–279. doi:10.1016/j.intimp.2004.09.031
https://pubmed.ncbi.nlm.nih.gov/15652758/?from_term=%28%28aloe%29+AND+%28vera%29%29+AND+%28molecular%29%29+AND+%28weight%29&from_sort=&from_page=5&from_pos=1
- 13- Turner CE, Williamson DA, Stroud PA, Talley DJ. Evaluation and comparison of commercially available Aloe vera L. products using size exclusion chromatography with refractive index and multi-angle laser light scattering detection. *Int Immunopharmacol*. 2004;4(14):1727–1737. doi:10.1016/j.intimp.2004.07.004
https://pubmed.ncbi.nlm.nih.gov/15531289/?from_term=%28%28aloe%29+AND+%28vera%29%29+AND+%28molecular%29%29+AND+%28weight%29&from_sort=&from_page=2&from_pos=4