

XBIOTIX



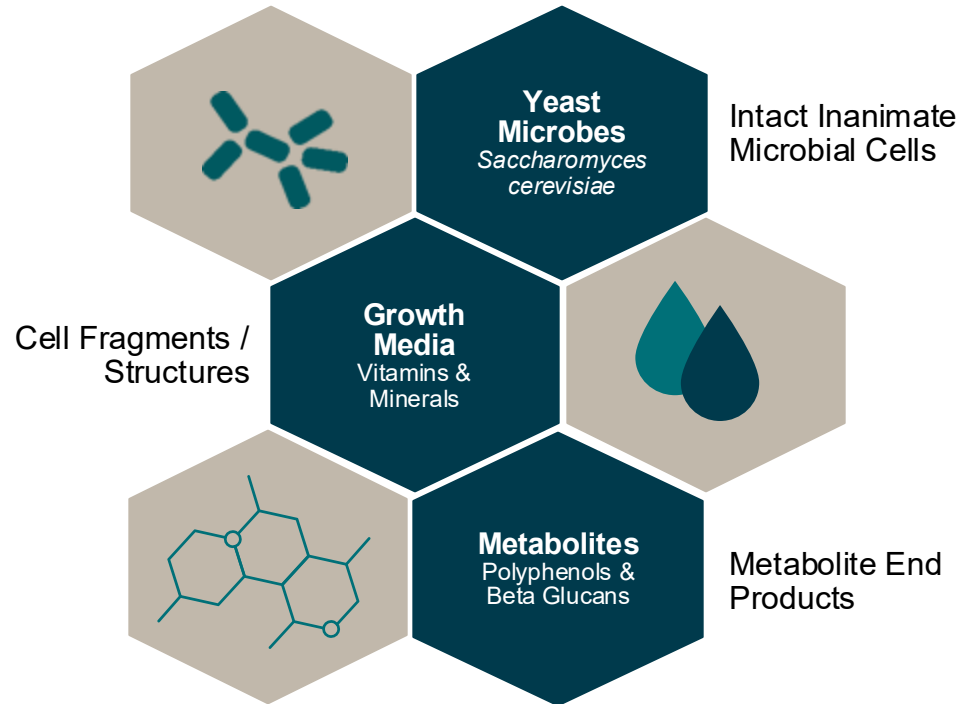
Postbiotic for Immune Health

EpiCor Introduction



Complete Postbiotic

Through fermentation outside of the body, EpiCor consistently delivers a beneficial mix of yeast metabolites



Epic Origin

Serendipitous discovery, intentional advancement



1900's

As a boy, C.W. Bloomhall observes health improvements of farm animals fed with partially fermented table scraps



1943

Observation turned business; Diamond V makes fermented yeast product to improve the health and productivity of livestock

1990's

Accidental discovery: Diamond V plant workers exposed to fermented product took fewer sick days than office colleagues



2000's

Pilot studies showed that plant workers were healthier; stronger immune systems due to ingesting fermentate

2005

Food-grade facility opens to produce EpiCor, whole food yeast fermentate made specifically for humans



2018

EpiCor becomes a fully owned subsidiary of Cargill and the focus of future scientific research

2021

EpiCor redefined as a postbiotic adhering to the consensus definition published by ISAPP



What is a postbiotic?



a **Cargill** brand

Whats the Difference?

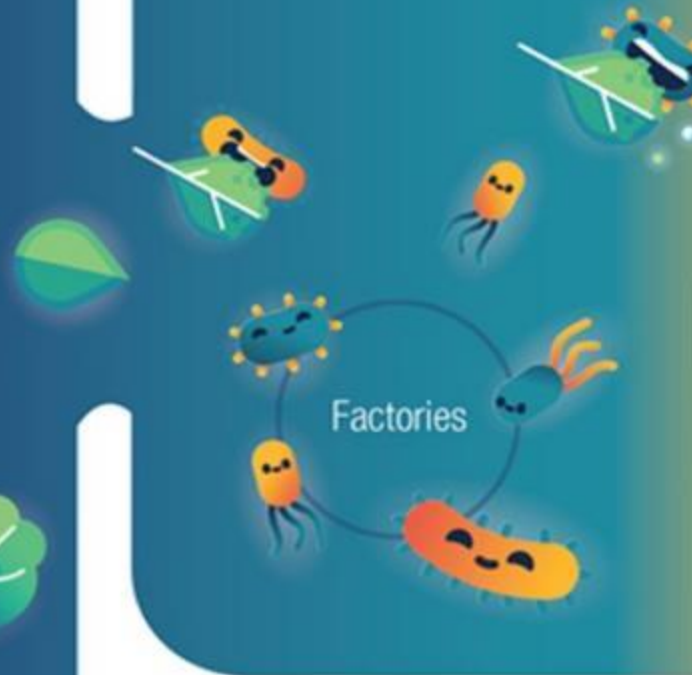
PREBIOTICS

Prebiotics, like fiber found in leafy greens, are **The Fuel** for the beneficial bacteria in your gut.



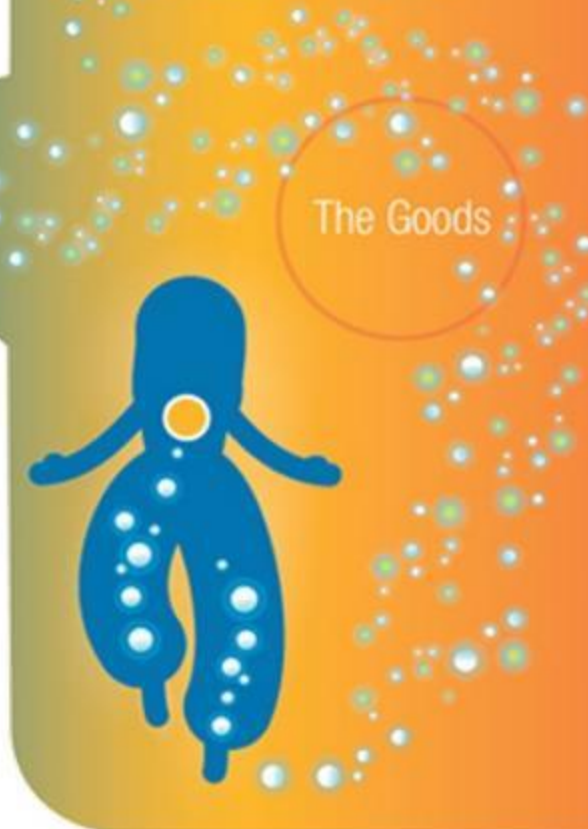
PROBIOTICS

Probiotics, such as live beneficial bacteria, act like **Factories** to ferment fibers and prebiotics to make *Metabolites*.



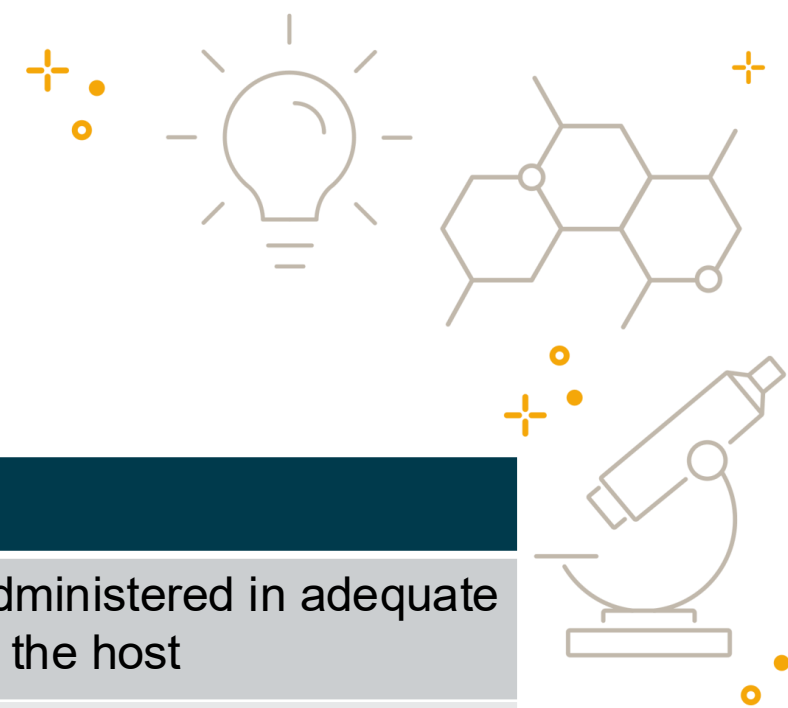
POSTBIOTICS

Fermented outside the body by bacteria or yeast, postbiotics contain the beneficial metabolites, **The Goods**, that support your body.



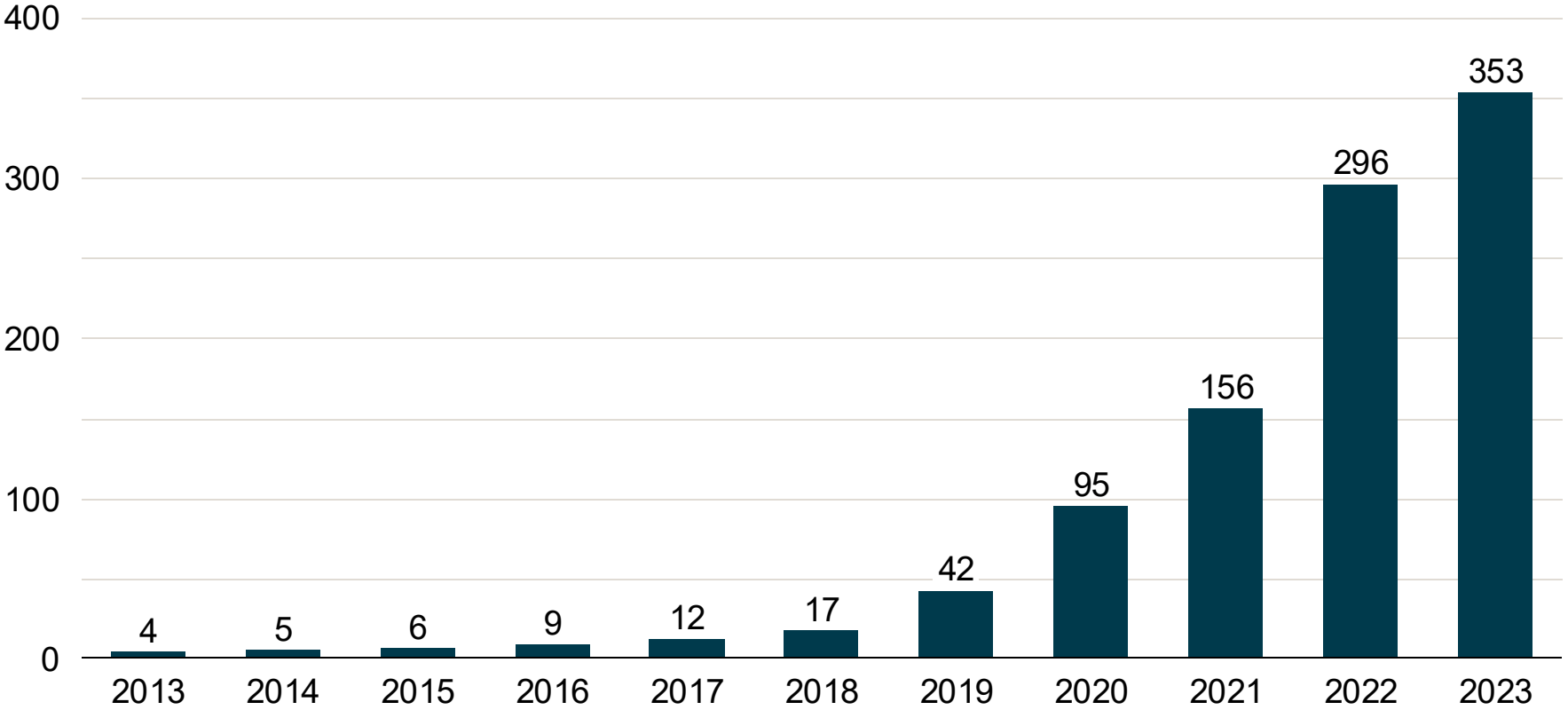
Postbiotics Defined

By the International Scientific Association of Probiotics and Prebiotics (ISAPP)



| Biotic | Year Defined | Definition |
|------------|--------------|---|
| Probiotic | 2013 | live microorganisms that, when administered in adequate amounts, confer a health benefit on the host |
| Prebiotic | 2016 | a substrate that is selectively utilized by host microorganisms conferring a health benefit |
| Postbiotic | 2021 | a preparation of inanimate microorganisms and/or their components that confers a health benefit on the host |

Postbiotics Have Become a Focus of Published Research



of Postbiotic Publications



Every part of the cells are in EpiCor® postbiotic nothing is filtered out or isolated

EpiCor is a specific species of microorganism: Baker's yeast (*Saccharomyces cerevisiae*)

The cells are completely inanimate, killed by heat-drying

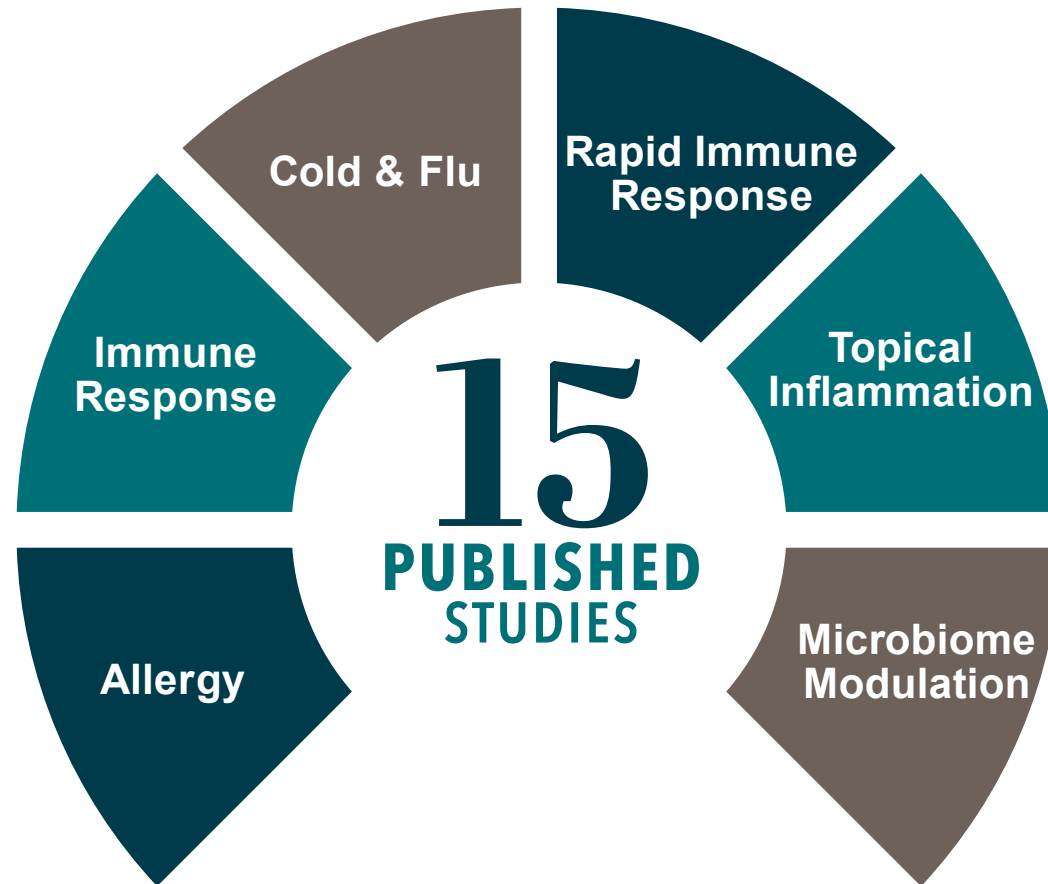
“A preparation of inanimate microorganisms and/or their components that confer health benefits on the host”

Over a dozen published studies, including multiple human clinical trials, show that EpiCor postbiotic supports immune health



Clinically Studied

EpiCor has invested significant resources to develop an extensive scientific dossier with a pipeline of future research.



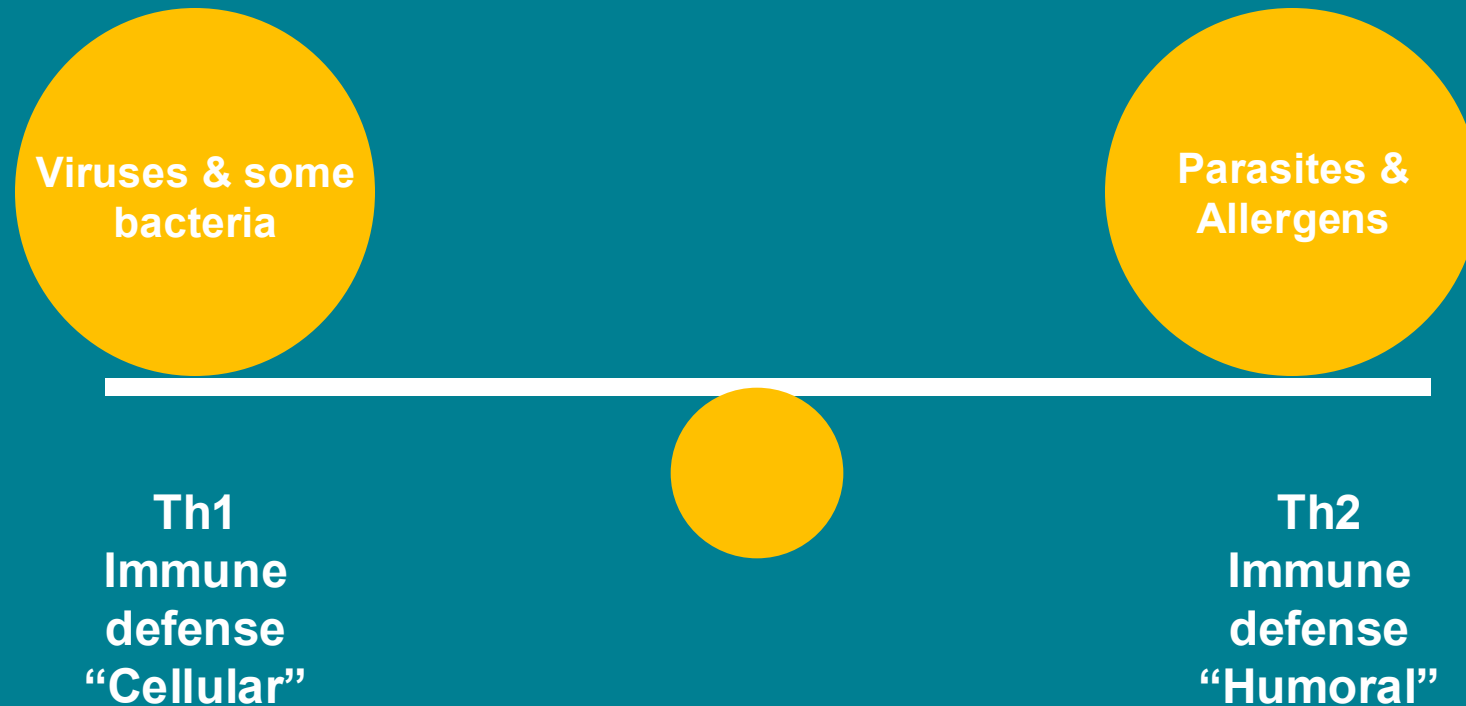
Clinical Support: Immunity



Disclaimer: The research summaries provided in this section are for informational purposes only. The information herein is believed to be an accurate and reliable summary of the referenced studies, but Cargill does not warrant its completeness or accuracy, nor is the content intended to create, does not create, and may not be relied upon to create any rights, substantive or procedural, enforceable at law. You should not rely exclusively on the information provided on these slides but instead should review the referenced studies in their entirety.



Immune System in Balance



Adult Cold & Flu (2008)

Health Outcomes

- EpiCor postbiotic is clinically shown to support immune health.
- EpiCor postbiotic may help reduce nasal symptom occurrence and support the immune system.
- Clinical studies indicate that EpiCor postbiotic taken daily may support seasonal immune health.
- A daily dose of EpiCor postbiotic may reduce occasional nasal symptoms due to seasonal challenges.

Study Design

- Randomized, double-blind, placebo-controlled
- 12 weeks; Dec 2006 – Mar 2007
- 116 vaccinated adults
- 500mg EpiCor® postbiotic daily or placebo
- Self-reported severity of symptoms

Clinical Outcomes

- Cold and flu-like symptom occurrences were significantly lower over 12 weeks ($p=0.011$)
- The duration of cold and flu-like symptoms was significantly lower by 17% ($p=0.028$)
- Reduced symptoms of hoarseness, nasal stuffiness, and duration of feelings of weakness ($p=0.008$)



IMMUNE HEALTH



Moyad, M. A., et al. (2008). Effects of a modified yeast supplement on cold/flu symptoms. *Urol Nurs* 28 (1), 50-5.

<https://www.ncbi.nlm.nih.gov/pubmed/18335698>

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Adult Cold & Flu (2010)

Health Outcomes

- EpiCor postbiotic is clinically shown to support immune health.
- EpiCor postbiotic may help reduce nasal symptom occurrence and support the immune system.
- Clinical studies indicate that EpiCor postbiotic taken daily may support seasonal immune health.
- A daily dose of EpiCor postbiotic may reduce occasional nasal symptoms due to seasonal challenges.

Study Design

- Randomized, double-blind, placebo-controlled
- 12 weeks; Dec 2006 – Mar 2007
- 116 unvaccinated adults
- 500mg EpiCor[®] postbiotic daily or placebo
- Self-reported severity of symptoms

Clinical Outcomes

- Cold and flu symptoms clinical occurrences were significantly lower with EpiCor postbiotic vs placebo over 12 weeks (p=0.01)



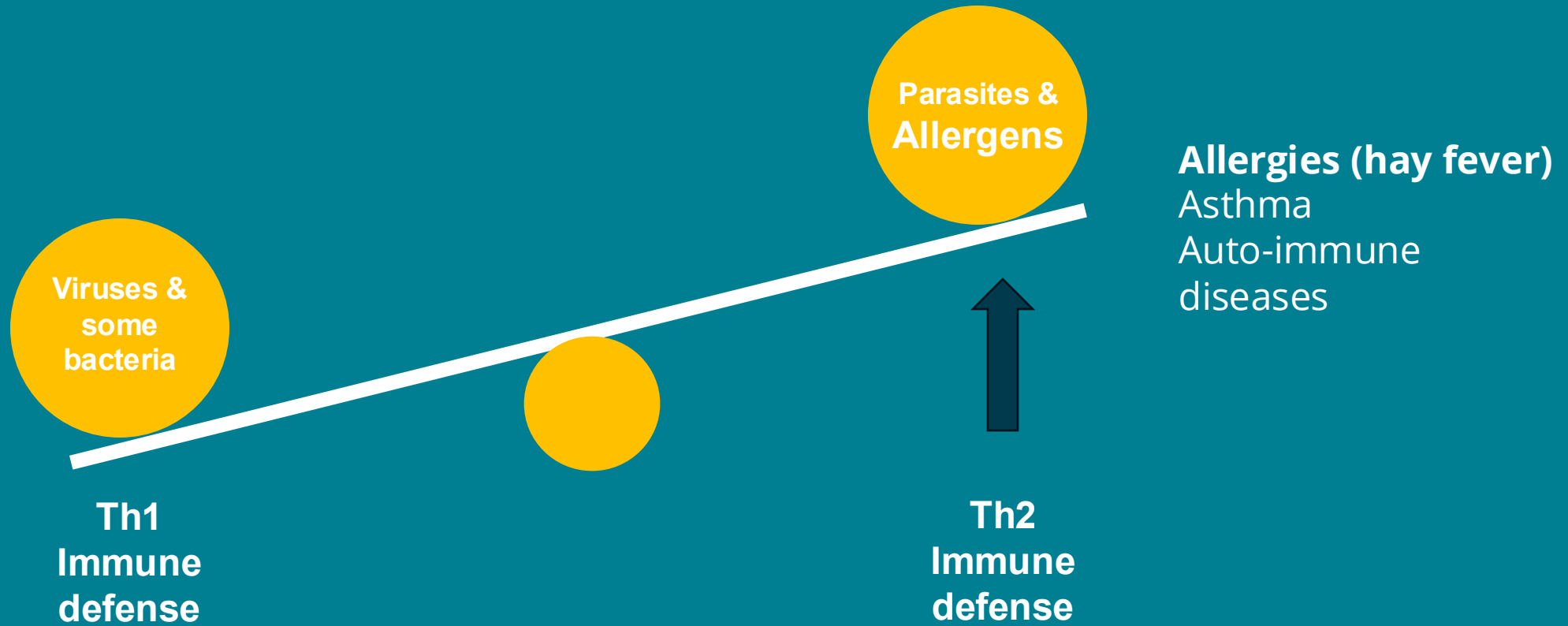
IMMUNE HEALTH



Moyad, M. A., et al. (2010). Immunogenic yeast based fermentate for cold/flu like symptoms in nonvaccinated individuals. *J Altern Complement Med* 16 (2), 213-8.

<https://pubmed.ncbi.nlm.nih.gov/20180695/>

Suboptimal Immune function



Allergy (2009)

Health Outcomes

- Emerging science shows EpiCor helps improve symptoms such as occasional nasal congestion.
- A daily dose of EpiCor postbiotic may reduce occasional nasal symptoms.
- Clinical studies indicate that EpiCor taken daily may support seasonal immune health.
- A daily dose of EpiCor may reduce occasional nasal symptoms due to seasonal challenges.

Study Design

- Randomized, double-blind, placebo-controlled
- 12 weeks; Spring allergy season
- 78 adults with confirmed allergies
- 500mg EpiCor® postbiotic daily or placebo
- Self-reported incidence and severity; blood and saliva

Clinical Outcomes

- Nasal congestion severity and duration significantly reduced (p=0.04)
- Rhinorrhea severity significantly reduced (p=0.005)
- Mean number of days with nasal congestion significantly reduced by 25% (p=0.04)
- Median number of days with nasal congestion reduced by 43%
- Rescue medication use for allergies significantly reduced (p=0.04)



IMMUNE HEALTH



Moyad, M. A., et al. (2009). Immunogenic yeast-based fermentation product reduces allergic rhinitis induced nasal congestion: a randomized, double blind, placebo-controlled trial. *Adv Ther* 26 (8), 795-804.

<https://www.ncbi.nlm.nih.gov/pubmed/19672568>

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EpiCor Health Outcomes

In Conclusion ...

- **Daily EpiCor is clinically shown to support immune health during the flu & cold season**
- **A daily dose of EpiCor may reduce occasional nasal symptoms when experiencing hay fever**
- **EpiCor may help support a healthy gut microbiome**
- **More healthy days**

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