

Introducing



by Phibro Animal Health



A new and improved bacterial growth procedure for Autogenous Vaccines

- Bacteria have evolved in nature to survive in extreme environmental conditions which often restrict critical nutrients. Many gram-negative bacteria have done this by developing particular mechanisms to assist in capturing these needed nutrients.
- Nutrients are captured through dedicated proteins on the bacteria's cell surface. Bacteria express these proteins only when needed, however laboratory conditions can artificially create nutrient-restricted environments, inducing the bacteria to hyper-express these proteins.
- These nutrient capturing dedicated proteins can also serve as good antigens that can be used by the animal's immune system to strengthen its response against these pathogenic organisms.



Introducing **EASE** a new bacterial growth procedure for Enhanced Antigen Surface Expression.

EASE Growth Methodology:

A chemical restriction of nutrients critical to the bacteria's growth and multiplication promotes the organism to significantly upregulate nutrient capturing proteins on the cell surface.

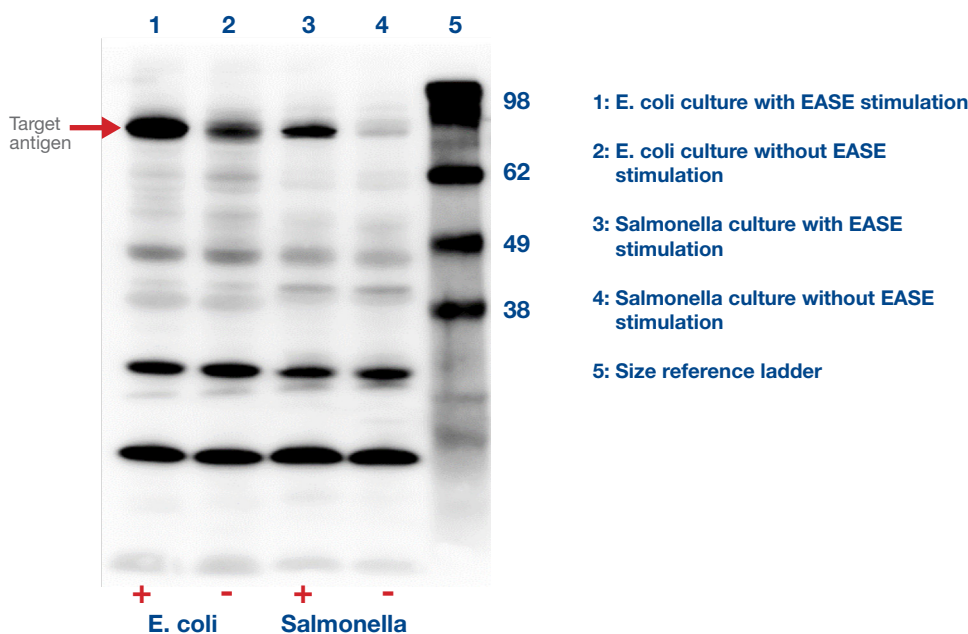
Enhancing the expression of these specific bacterial proteins helps the animal's immune system to strengthen its immune response.

Phibro is implementing the use of EASE technology to grow bacteria such as *Salmonella*, *E. coli* and other Gram-negative organisms for its autogenous vaccines production.

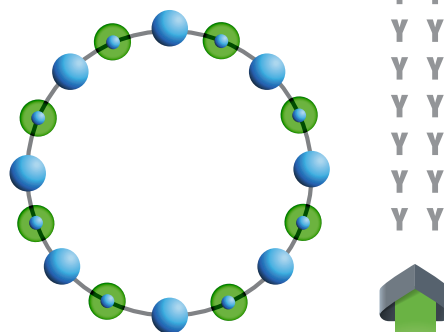
Benefits

- EASE results in an upregulation of proteins on the bacterial surface in its natural form
- EASE ensures a higher ratio of immunogenic proteins to other superficial proteins leading to a more focused immune response from the host animal
- EASE implementation leads to a purer, more defined vaccine product

Western Blot analysis with (+) and without (-) EASE

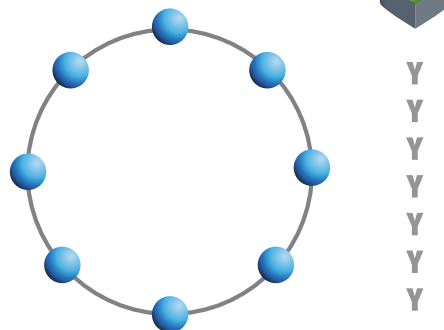


With EASE



Swine Immune Response

Without EASE



Literature/References

- 1: Klemperer RM, Ismail NT, Brown MR. J Gen Microbiol. 1979 Dec;115(2):325-31.
- 2: Tamura M1, Moore CJ, Cohen SN. J Bacteriol. 2013 Mar;195(6):1133-41.
- 3: Steeb B, Claudi B, Burton NA, et al. PLoS Pathog. 2013;9(4):e1003301.
- 4: Foley SL, Johnson TJ, Ricke SC, et al. Microbiol Mol Biol Rev. 2013 Dec;77(4):582-607.
- 5: Naili I, Vinot J, Baudner BC, et al. Vaccine. 2019 Jan 7;37(2):314-324.

*Potency and efficacy of autogenous biologics have not been established.

Phibro Autogenous Vaccines are developed with MVP Adjuvants®

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