Introducing

EASE™

Enhanced Antigen Surface Expression

by Phibro Animal Health

A new and improved bacterial growth procedure for Autogenous Vacccines

- *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.

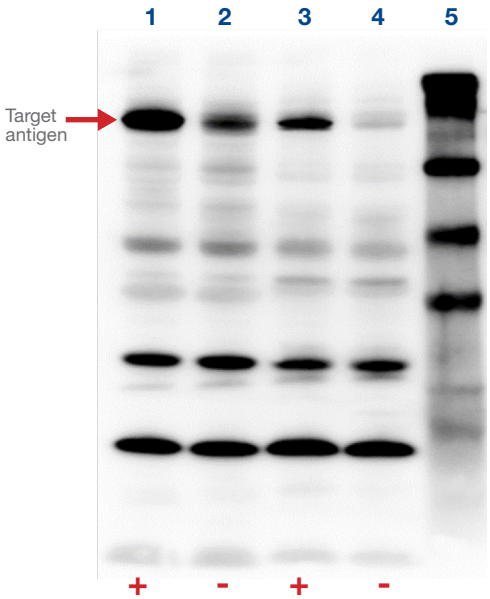
Enhancing the expression of these specific bacterial proteins helps the animal's immune system to strengthen its immune response.

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



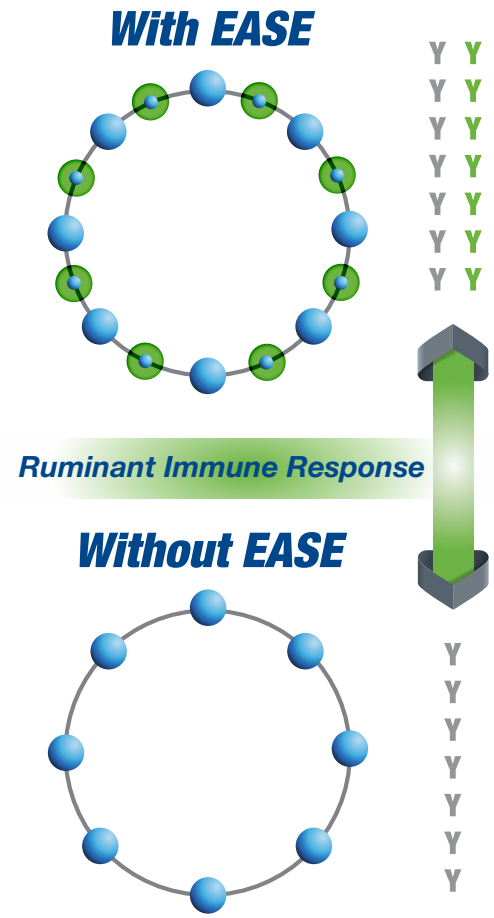
1: E. coli culture with EASE stimulation

2: E. coli culture without EASE stimulation

3: Salmonella culture with EASE stimulation

4: Salmonella culture without EASE stimulation

5: Size reference ladder



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®

PVO860420USA ©2020 Phibro Animal Health Corporation, Phibro, Phibro logo design EASE, and MVP Adjuvants are trademarks owned by or licensed to Phibro Animal Health Corporation or its affiliates.

Phibro ANIMAL HEALTH CORPORATION ™