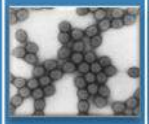
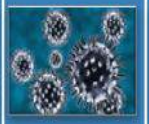
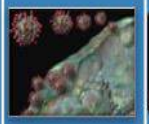
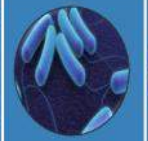
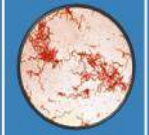
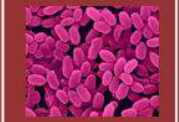
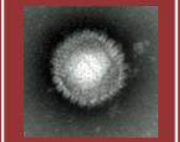
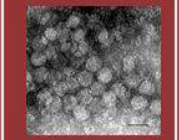
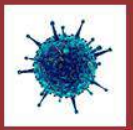
¿Cómo vamos?

Depende.....
Tengo diarreas de todos los colores hasta No me va mal poniendo aditivos....muchos aditivos

Estrategias inmunológicas

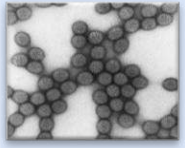
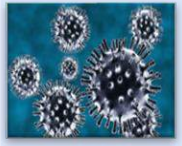
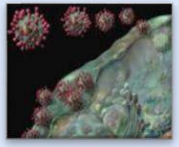
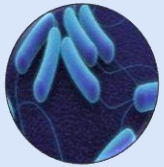
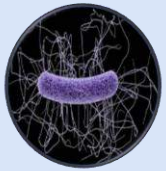
	 Rotavirus	 TGE	 PDVE	 E. coli	 E. coli (VT)	 C. perfrin. C	 C. perfrin. A	 C. difficile	 L. intracel	 B. hyodise	 Salmonella
	NO Rota A. Importación de USA. Parenteral	**NO**	**NO**	**SI** Parenteral 8 registradas	**SI** Parenteral 2 registradas	**SI** Parenteral (Toxoide) 4 registradas	**SI** Parenteral (Toxoide) 2 registradas	**SI** Parenteral	**SI** VO 1 registrada	**NO**	**NO**

	 *Mycoplasma hyopneumoniae*	 A. pleuropneumoniae	 B. bronchiseptica	 P. multocida	 H. parasuis	 E. rhusiopathiae	 Aujeszky	 PCV2	 SIV
Lechón	**SI** 13 registradas VP	**SI** 3 registradas VP	**SI** 12 registradas VP	**SI** 4 registradas VP	**SI** 4 registradas VP	**SI** 3 registradas VP	**SI** 15 registradas VP/VIN	**SI** 4 registradas VP	**SI** 3 registradas VP

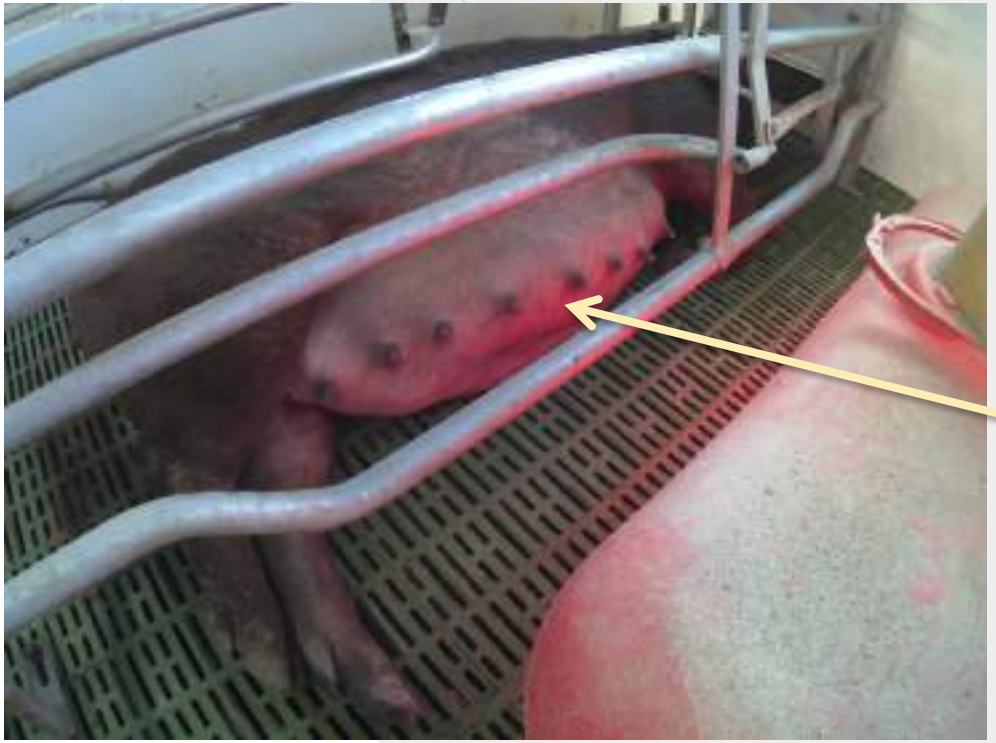
¿QUE VACUNAS TENEMOS?

¿A QUIÉN VACUNAMOS?

ENCALOSTRADO

	 Rotavirus	 TGE	 PDVE	 *E. coli*	 *E. Coli* (VT)	 C. Perfrin. C	 C. Perfrin. A	 C. difficile
Cerda	NO Rota A. Importación de USA. Parenteral	NO	NO	SI. Parenteral	No	SI. Parenteral (Toxoide)	SI. Parenteral (Toxoide)	SI. Parenteral (Toxoide)
Lechón	NO Rota A. Importación de USA. Oral o Parenteral	NO	NO	SI. Oral y Parenteral.	Si Parenteral	SI. Parenteral (Toxoide)	SI. Parenteral (Toxoide)	NO

PERO PARA VACUNAR A LAS CERDAS.....



- Manejo de camadas al nacimiento
- Adopciones coherentes
- Nº de tetas
  - ✓ Tetas funcionales
  - ✓ Pezones íntegros
- ¿Cantidad de calostro?

Decide bien que vacunas usar

Diagnostico

Diagnostico, diagnostico y diagnostico.

Prestale atencion a aquellos patogenos mas importantes.

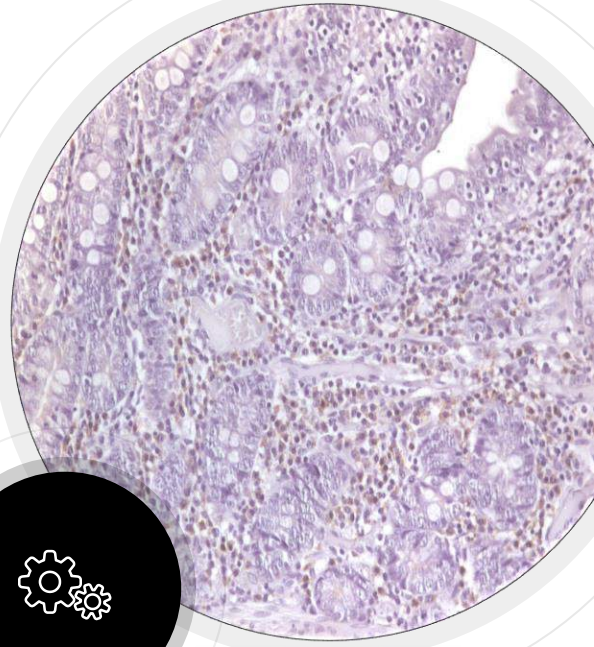
Cojugacion respiratorio-sistemico-digestivo

Importancia economica

Obvio. Prestale mas atencion a aquellos que mas dano economico te hacen

Estrategia

Combina inmunidad maternal con inmunidad adaptativa siempre que tengas un buen ancalostrado.



¿Algun dia tendremos vacunas smart?

Optimicemos el sistema inmune

Ligado a un ***DIAGNOSTICO CERTERO***

Escherichia coli inactivada con adhesina F4
Escherichia coli,inactivada con adhesina F5
Escherichia coli inactivada con adhesina F6
Escherichia coli inactivada con adhesina F41
Escherichia coli inactivada con adhesina F18ab
Escherichia coli inactivada con adhesina F18ac
Toxoide α de Clostridium perfringens tipo C
Toxoide β de Clostridium perfringens tipo C
Toxoide α de Clostridium perfringens tipo A
Toxoide β de Clostridium perfringens tipo A
Toxoide ε de C. perfringens tipo D
Rotavirus A
Rotavirus C
PEDV
TGEV

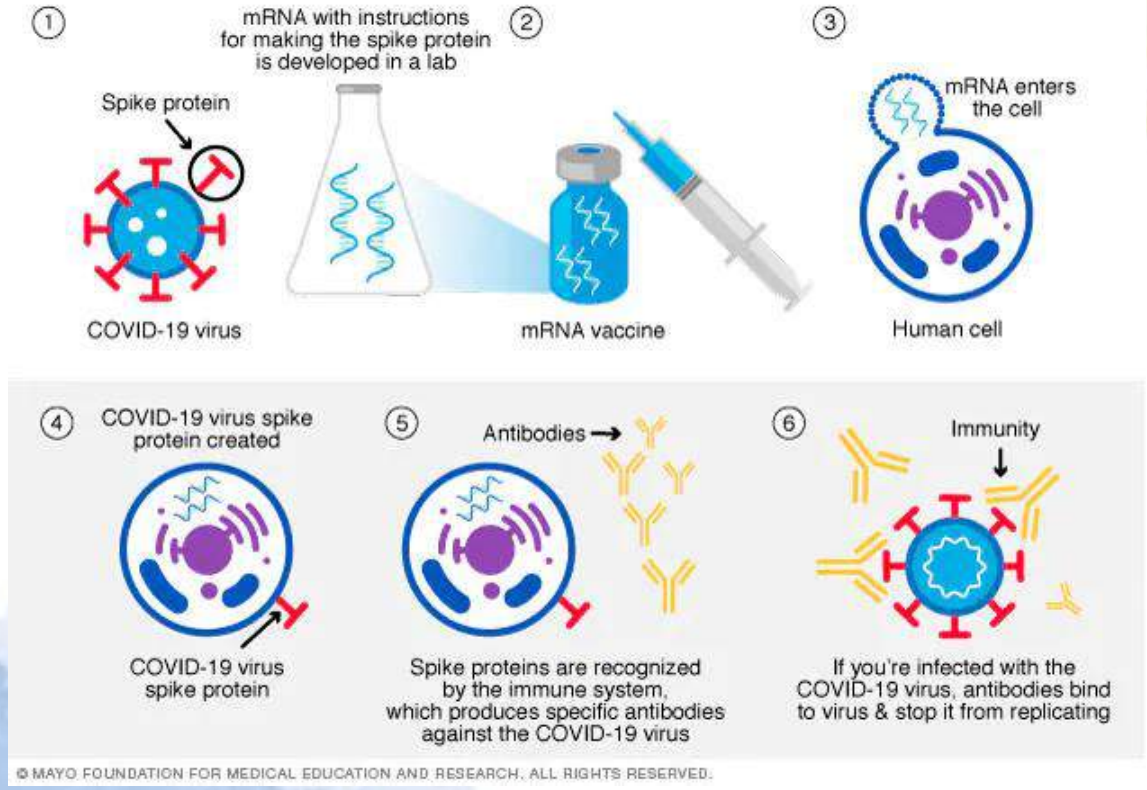
Escherichia coli inactivada con adhesina F4
Toxoide α de Clostridium perfringens tipo C
Rotavirus A

Escherichia coli inactivada con adhesina F4
Escherichia coli inactivada con adhesina F18ab

Rotavirus A
PEDV

Escherichia coli inactivada con adhesina F4
Toxoide α de Clostridium perfringens tipo C
Toxoide α de Clostridium perfringens tipo A
Toxoide β de Clostridium perfringens tipo A
Rotavirus C

VACUNAS ARNm



Y de feedback no vamos a hablar?

Estrategia valida si no hay vacuna

Bien hecha, usando antibiotico, sin cultivo.

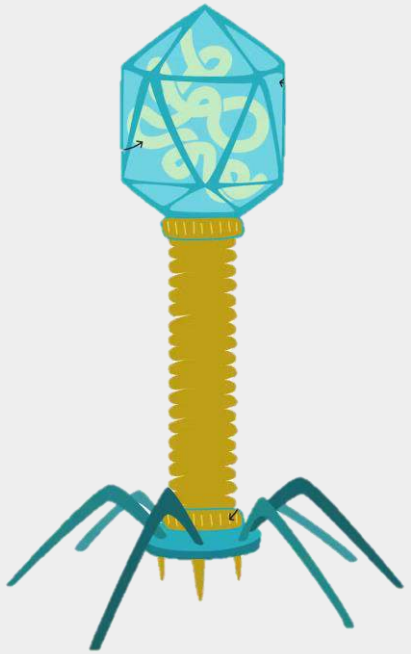
Desventaja: sabemos porque lo hacemos, sabemos frente a que queremos inmunizar el colectivo.....pero no sabemos en realidad que metemos ni que dosis.

Y de AUTOVACUNAS?

De nuevo estrategia valida si no hay vacuna

Pero desafortunadamente en algunos patogenos se ha convertido en la norma por la ausencia de vacunas comerciales

Fagos?



vaccines

MDPI

Review

Bacteriophage-Based Vaccines: A Potent Approach for Antigen Delivery

Alejandro González-Mora [1], Jesús Hernández-Pérez [1], Hafiz M. N. Iqbal [1], Marco Rito-Palomares [2] and Jorge Benavides [1,*]

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2 Tecnologico de Monterrey, School of Medicine and Health Sciences, Ave. Morones Prieto 3000 Pte, Monterrey, N.L. 64710, Mexico; mrito@tec.mx

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Received: 31 July 2020; Accepted: 1 September 2020; Published: 4 September 2020

Abstract: Vaccines are considered one of the most important bioproducts in medicine. Since the development of the smallpox vaccine in 1796, several types of vaccines for many diseases have been created. However, some vaccines have shown limitations as high cost and low immune responses. In that regard, bacteriophages have been proposed as an attractive alternative for the development of more cost-effective vaccines. Phage-displayed vaccines consists in the expression of antigens on the phage surface. This approach takes advantage of inherent properties of these particles such as their adjuvant capacity, economic production and high stability, among others. To date, three types of phage-based vaccines have been developed: phage-displayed, phage DNA and hybrid phage–DNA vaccines. Typically, phage display technology has been used for the identification of new and protective epitopes, mimotopes and antigens. In this context, phage particles represent a versatile, effective and promising alternative for the development of more effective vaccine delivery systems which should be highly exploited in the future. This review describes current advances in the development of bacteriophage-based vaccines, with special attention to vaccine delivery strategies. Moreover, the immunological aspects of phage-based vaccines, as well as the applications of phage display for vaccine development, are explored. Finally, important challenges and the future of phage-bases vaccines are discussed.

Keywords: bacteriophage; vaccines; phage display technology; immunological mechanism; antigen delivery

pharmaceuticals

MDPI

Review

Bacteriophages as Potential Tools for Use in Antimicrobial Therapy and Vaccine Development

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1 Department of Molecular Biotechnology and Microbiology, Chemical Faculty, Gdańsk University of Technology, Narutowicza 11/12, 80-233 Gdańsk, Poland; rafpiate@pg.edu.pl

2 Bio Incubator Centre, Gdańsk University of Technology, Narutowicza 11/12, 80-233 Gdańsk, Poland

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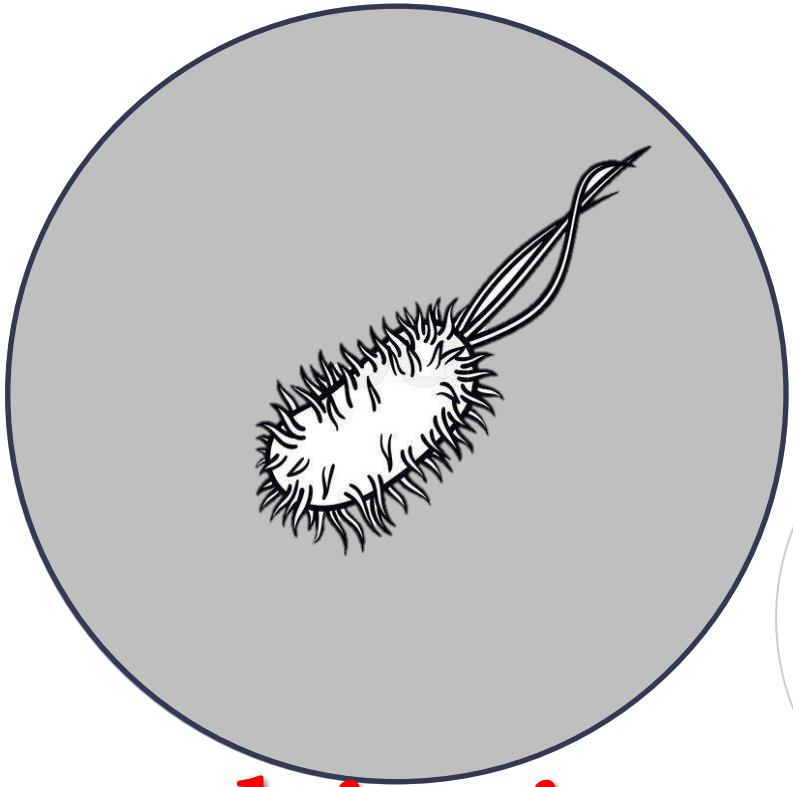
Abstract: The continually growing number of people suffering from bacterial, viral, or fungal infections, parasitic diseases, and cancers prompts the search for innovative methods of disease prevention and treatment, especially based on vaccines and targeted therapy. An additional problem is the global threat to humanity resulting from the increasing resistance of bacteria to commonly used antibiotics. Conventional vaccines based on bacteria or viruses are expensive and not generally effective in preventing and controlling various infectious diseases in humans. However, there are problems with the stability of these vaccines, their transport, targeted delivery, side use, and side effects. In this context, experimental phage therapy based on viruses replicating in bacterial cells currently offers a chance for a breakthrough in the treatment of bacterial infections. Phages are not infectious and pathogenic to eukaryotic cells and do not cause diseases in human body. Furthermore, bacterial viruses are sufficiently resistant to external factors with potential adjuvant abilities, easy to manipulate, and stable. They can also be produced on a large scale with cost reduction. In recent years, they have also provided an ideal platform for the design and production of phage-based vaccines to induce protective host immune responses. The most promising in this group are phage-displayed vaccines, allowing for the display of immunogenic peptides or proteins on the phage surfaces, or phage DNA vaccines responsible for expression of target genes encoding protective antigens incorporated into the phage genome. Phage vaccines including the production of specific antibodies may in the future protect us against infectious diseases and constitute an effective immune tool to fight cancer. Moreover, personalized phage therapy can represent the greatest medical achievement that saves lives. This review demonstrates the latest advances and developments in the use of phage vaccines to prevent human infections of diseases, phage-based therapy including clinical trials, and personalized treatment adjusted to the patient's needs and the type of bacterial infection. It highlights the advantages and disadvantages of experimental phage therapy and, at the same time, indicates its great potential in the treatment of various diseases, especially those resistant to commonly used antibiotics. All the analyses performed look at the rich history and development of phage therapy over the past 100 years.

Keywords: phages; phage-based vaccines; phage display technology; phage DNA vaccines; bacterial resistance; phage therapy

1. Introduction

The increasing number of antibiotic-resistant bacteria correlates with increased healthcare costs, morbidity, and mortality worldwide. The World Health Organization (WHO), Geneva, Switzerland) correctly notes that antibiotic resistance is one of the greatest threats to public health and global development. In 2016, WHO prepared the tenth revision of the international statistical classification of diseases and related health problems, abbreviated ICD-10, 17 chronic categories (Supplementary Materials, Table S1) [1]. In addition, WHO unveiled a global list of antibiotic-resistant bacteria to intensify the research and development of new drugs against resistant bacteria. The analyses showed that 64% of pathogenic



Probioticos

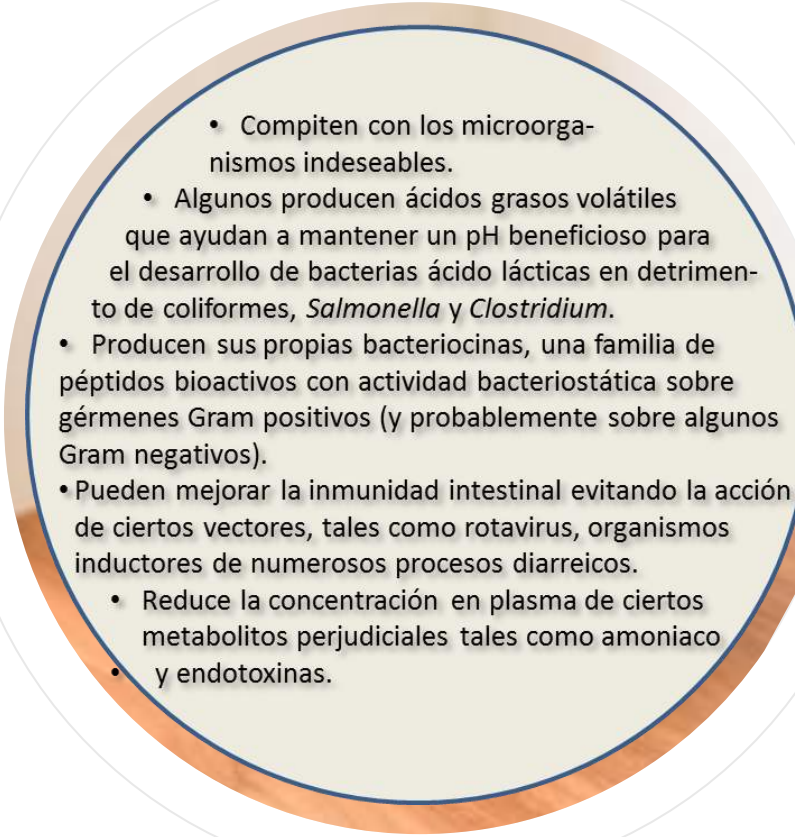
Probioticos

Cultivos vivos de bacterias y levaduras (algunos no contienen germenes vivos, solo paredes de levaduras)

Modo de accion: establecer competencia con bacterias patogenas o saprófitas con potencial patogeno.

Resultados: variables en ocasiones inconsistentes.

Fase de utilización: LACTACION Y TRANSICION



Especies

- *Bacillus coagulans*
- *Bacillus cereus*
- *Bacillus licheniformis*
- *B. licheniformis + B. subtilis*
- *Bacillus toyoi*
- *Bifidobacterium lactis (**mejora funciones inmunes como fagocitosis o inm. celular**)*
- *Bifidobacterium animalis (**protege ID de citocinas preoducidas por infec.** E.coli)*
- *Brevibacterium lactofermentum*
- *Clostridium butyricum (**produce grandes cantidades de butirato, altera pH**)*
- *Enterococcus faecium (**inhibe la adhesión de E. coli F4**)*
- *Escherichia coli productor de colicina (**reduce la adhesión de E. coli F4**)*
- *Lactobacillus rhamnosus (**protege ID de citocinas preoducidas por** infec. E.coli)*
- *Lactobacillus casei*
- *Lactobacillus acidophilus*
- *Lactobacillus fermentum (**inhibe la adhesión de E. coli F4**)*
- *Lactobacillus + Streptococcus*
- *Sacharomyces cerevisae + Lactobacillus acidophilus + Streptococcus faecium*
- *Saccharomyces boulardii + B. cereus*
- *Streptococcus faecium*

Prebioticos

Sustancias fermentables que promueven el crecimiento selectivo de bacterias beneficiosas

Lactosa: el ejemplo en la naturaleza

Hemicelulosa, oligosacaridos, inulina, glucanos de cadena corta, fructosanos y arabinanos.

Almidon retrogrado: calentado y enfriado rapidamente.

Fase de utilización: TRANSICIÓN

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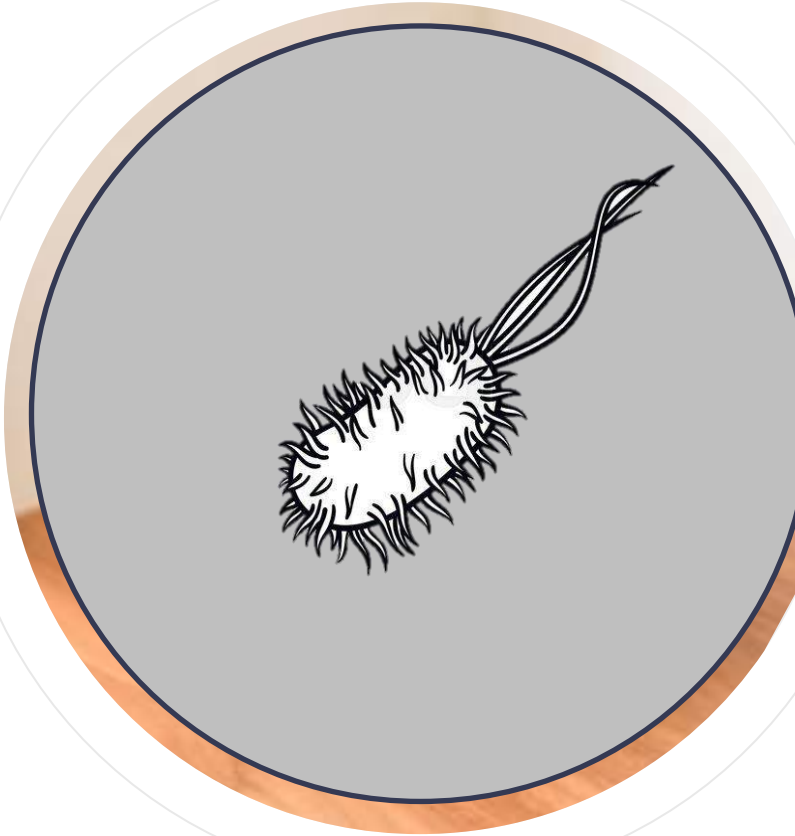


Especies

- *Bifidobacterium lactis* (mejora funciones inmunes como fagocitosis o inm. celular)
- *Bifidobacterium animalis* (protege ID de citocinas producidas por infec. *E.coli*)
- *Lactobacillus rhamnosus* (protege ID de citocinas producidas por infec. *E.coli*)
- *Lactobacillus casei*
- *Lactobacillus acidophilus*
- *Lactobacillus fermentum* (inhibe la adhesion de *E. coli* F4)
- *Streptococcus faecium*
- *Lactobacillus + Streptococcus*
- *Escherichia coli* productor de colicina (reduce la adhesion de *E. coli* F4)
- *Brevibacterium lactofermentum*
- *Bacillus coagulans*
- *Bacillus cereus*
- *Bacillus licheniformis*
- *B. licheniformis + B. subtilis*
- *Bacillus toyoi*
- *Sacharomyces cerevisae + Lactobacillus acidophilus + Strep*
- *Saccharomyces boulardii + B. cereus*
- *Enterococcus faecium* (inhibe la adhesion de *E. coli* F4)
- *Clostridium butyricum* (produce grandes cantidades de butirato, altera pH)

Fructooligosacáridos

Transgalactooligosacáridos

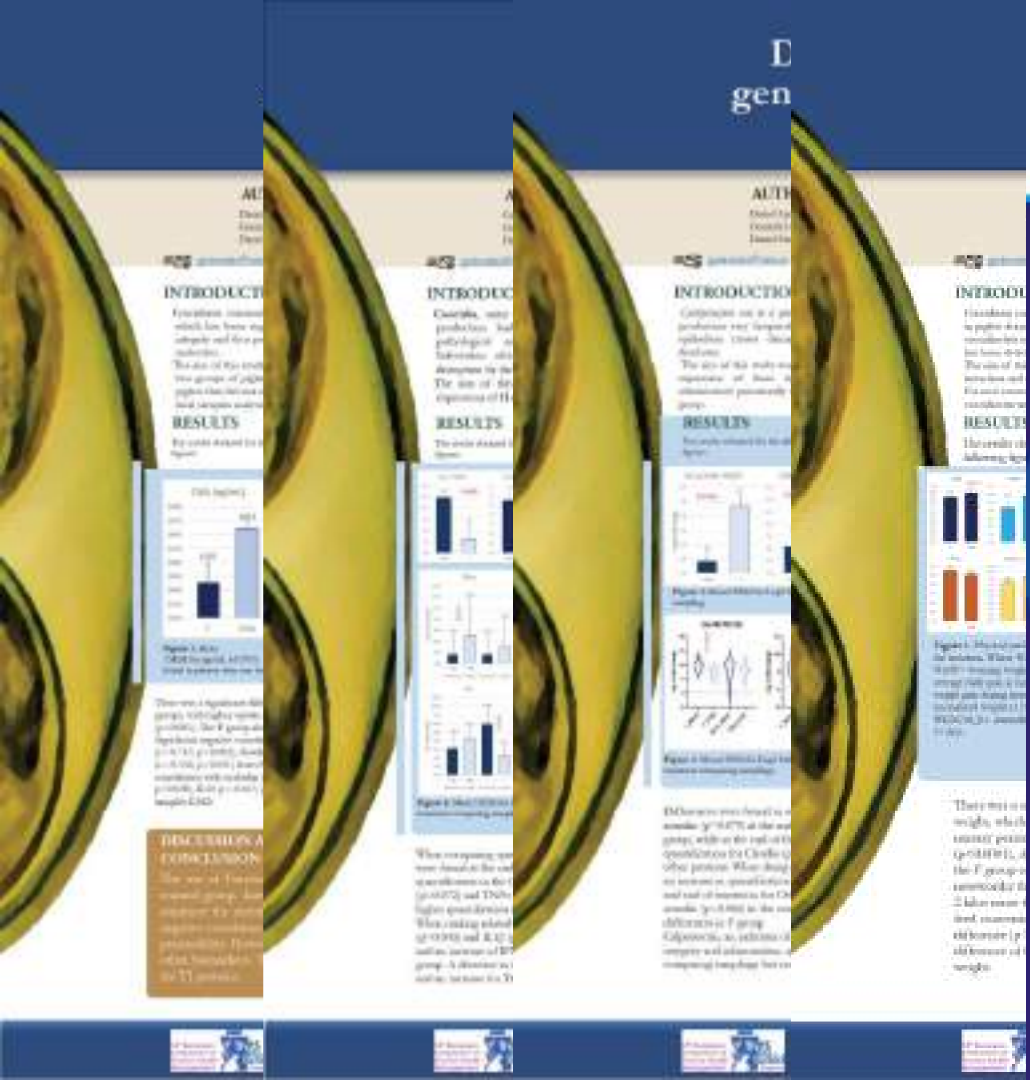
Almidón de patata

Especies

Bifidobacterium lactis (mejora funciones inmunes como fagocitosis o inm. celular)
Bifidobacterium animalis (protege ID de citocinas producidas por infec. *E.coli*)
Lactobacillus rhamnosus (protege ID de citocinas producidas por infec. *E.coli*)
Lactobacillus casei
Lactobacillus acido
Lactobacillus ferme
Streptococcus faec
Lactobacillus + Stre
Escherichia coli pro
Brevibacterium lact
Bacillus coagulans
Bacillus cereus
Bacillus licheniformis
B. licheniformis + B. subtilis
Bacillus toyoi
Sacharomyces cerevisae + Lactobacillus acidophilus + Streptococcus faecium
Saccharomyces boulardii + B. cereus
Enterococcus faecium (inhibe la adhesion de *E. coli* F4)
Clostridium butyricum (produce grandes cantidades de butirato, altera pH)

Simbiótico = Prebiótico + Probiótico

¿Parásitos?


INTRODUCTION
RESULTS

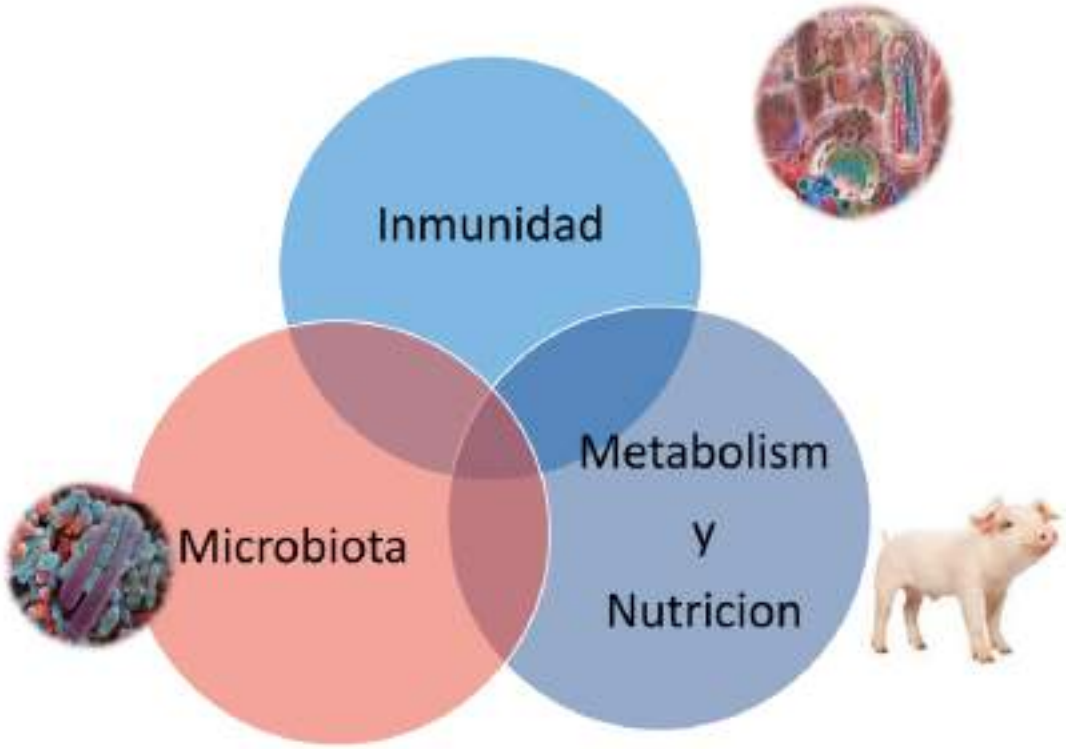

Growth and mortality in piglets treated with parenteral toltrazuril and iron
Guillermo Ramis, Ana B. Gonzalez-Guijarro, Elisa V. Hernández-Rodríguez, David Espigares
Background and objectives
Material and methods
Results
Discussion and conclusion
References

Nuevas perspectivas

Nuevos conceptos. Microbiota

La Salud es un equilibrio en el Holobiont

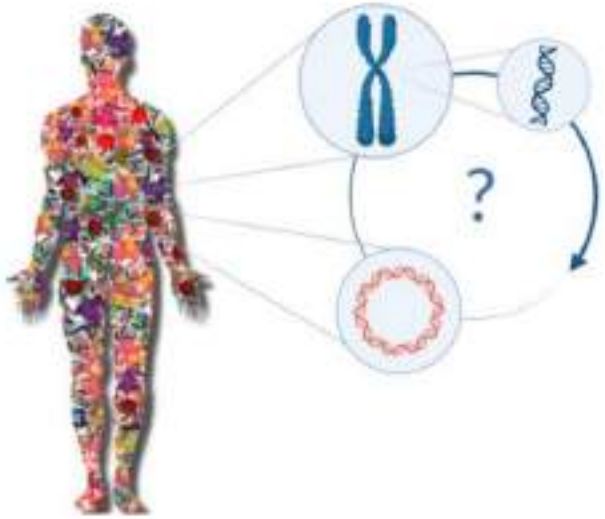
ISI Institute



The Holobiont concept for sustainability

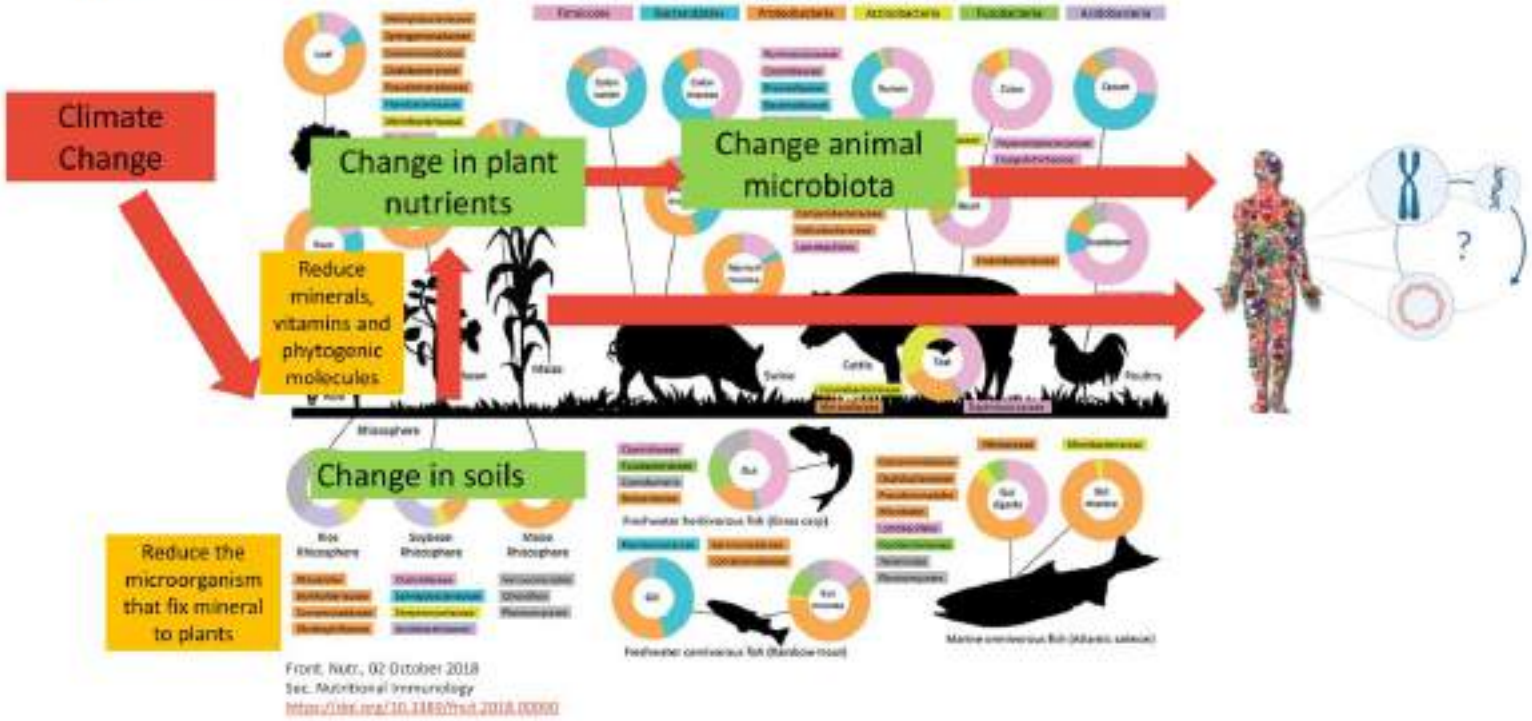
ISI Institute

The holobiont theory consider the host and microbiota as a unique entity where one can interact with each other in cooperation or mutualism to stablish a balance in order to have the better fitness of both systems (Simon et al., 2019).

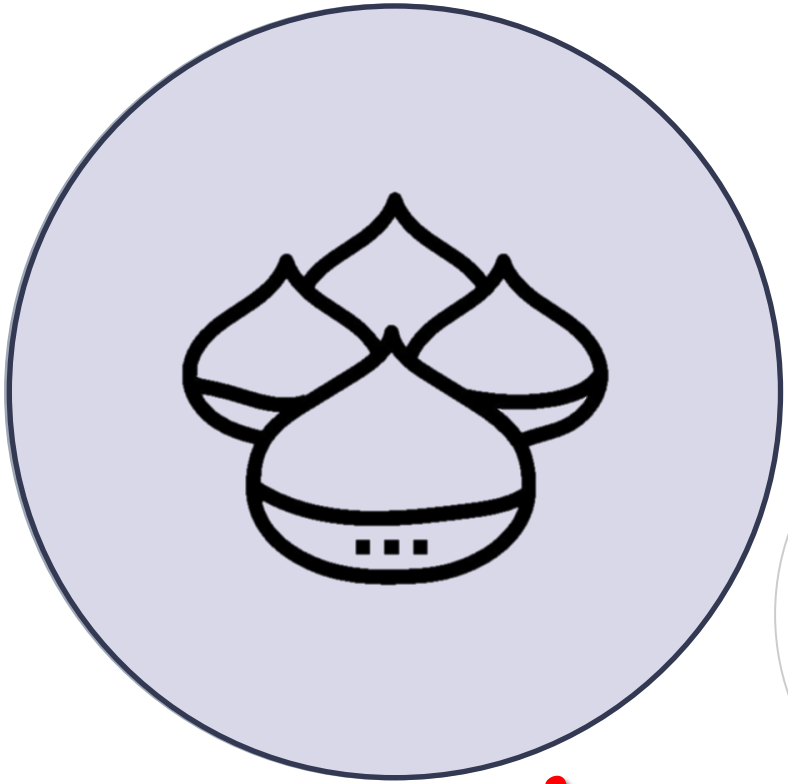


SUSTAINABILITY

THE HOLOBIONT CONCEPT FOR SUSTAINABILITY



Front. Nutr., 02 October 2018
Sec. Nutritional Immunology
https://doi.org/10.3389/fnut.2018.00090



Nutraceuticos y +

Nutraceuticos

Suplementos alimentarios

Sustancias vegetales

Aceites esenciales de romero, menta, anis, canela, tomillo, ajo, ginseng, orégano

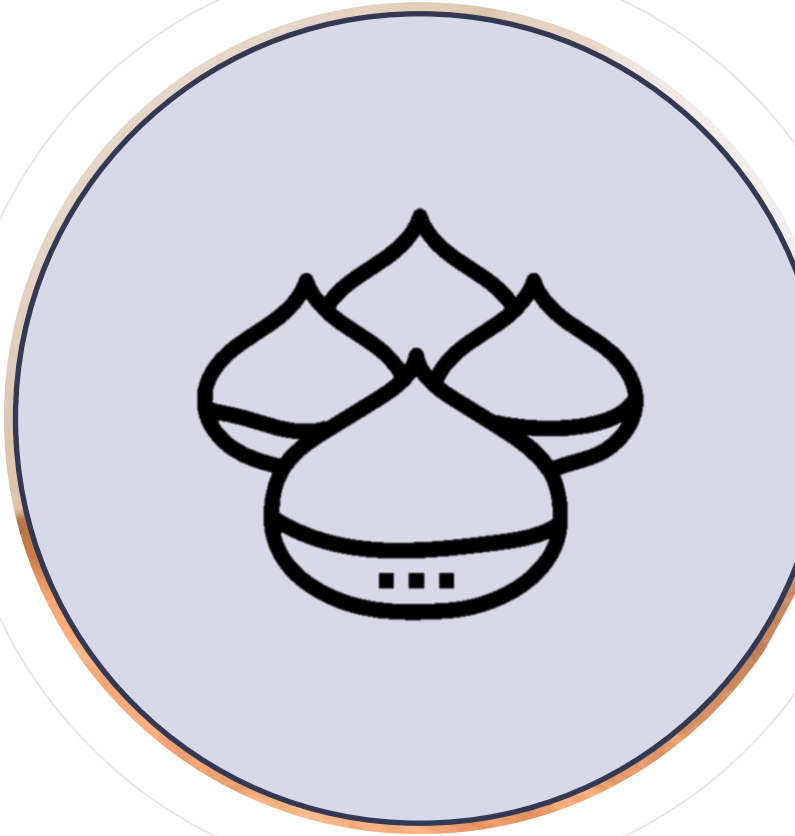
β-caroteno, luteina y xantenos, vitamina E: antioxidantes

Aceites de pescado ricos en acidos grasos ω-3

Taninos

FASE DE UTILIZACION: TODAS

.



Inmunomoduladores

Anticuerpos

Huevo liofilizado conteniendo anticuerpos frente a rotavirus y *E. coli*

Yema de huevo desecada con Ac frente a *E. coli* enterotoxico

Citoquinas (experiencias en pollos)

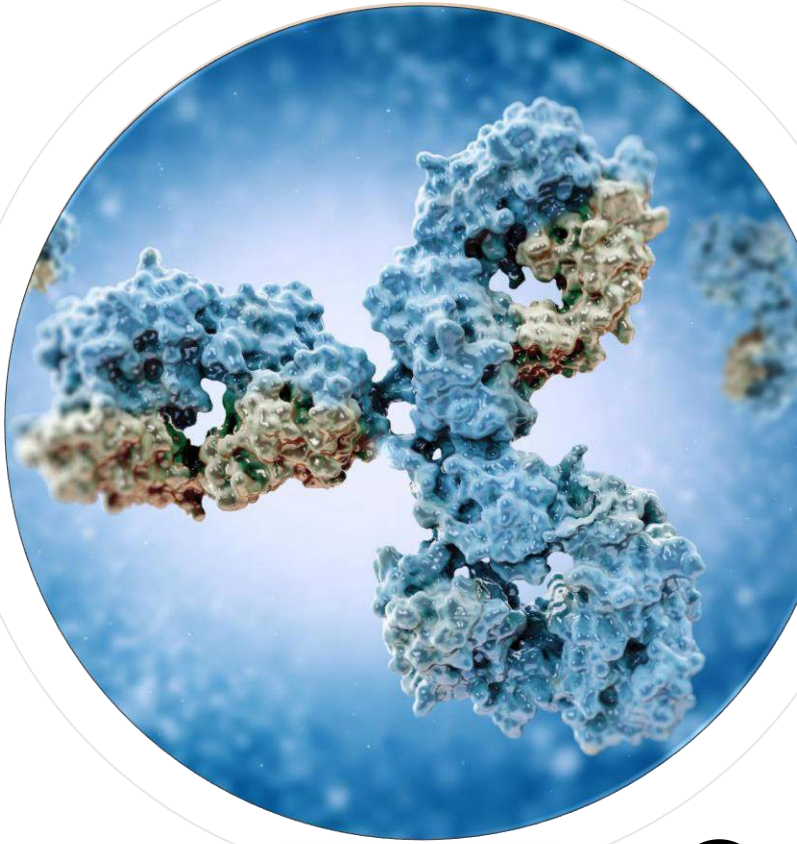
Proteínas plasmáticas liofilizadas

Contiene ciertas proteínas inmunoactivas

Péptidos antimicrobianos (más de 12 identificados en cerdos)

Acido linoleico conjugado: aumenta la producción de linfocitos T e IL-2.

FASES DE UTILIZACION: LACTACION Y TRANSICION.



CONCLUSIONES (si las hay)

8,850,000,000 €

AUTOABASTECIMIENTO: 212% (2021)

NO…NOS LO EXIGEN EL MERCADO Y EL EQUIVALENTE A ¾ DE NUESTRO CONSUMO LO VENDEMOS FUERA…..QUE SON MAS REACTIVOS A ESTOS TEMAS QUE EL MERCADO INTERIOR

UNA UNICA SOLUCION

Esto no existe. Tenemos que componer el conjunto de medidas que mejor nos ayude en nuestra realidad…vacunas, probioticos…. hacen falta varias cosas

Nuestras herramientas

UNO DE LOS COMPONENTES CLAVE DE CUALQUIER VACUNA

¿Qué es todo lo demás?

Vacunas, probióticos y prebióticos

Son las soluciones con mayor desarrollo tecnológico, científico y exigencias de la administración

Lo que no significa que nutraceuticos, inmunomoduladores y otras estrategias no vayan a ayudarnos

¿CUAL DE ESTAS SOLUCIONES FUNCIONARA IGUAL QUE LOS ANTIBIÓTICOS Y EL ZnO?

NINGUNA


MUCHAS
GRACIAS
POR LA
ATENCIÓN