



El aparato digestivo de los animales sanos está habitado por miles de millones de levaduras y bacterias saprofitas cuya función es participar en la conversión de los alimentos en nutrientes. Además son responsables de ocupar eficientemente el tracto digestivo para evitar el crecimiento de bacterias patógenas con las que compiten para poblar ese espacio.

Antes de ser domesticados los caballos pastaban libremente y así ingerían la flora microbiana en la cantidad y variedad necesarias para un óptimo funcionamiento del aparato digestivo. Se cree que los caballos domésticos en estabulación no ingieren con su alimentación normal suficiente cantidad de microorganismos para la necesaria renovación de la flora gastrointestinal, provocando una disminución gradual de ésta que puede ser la causa de patologías digestivas y/o una pobre respuesta del sistema inmunológico.



Ingredientes activos (por dosis):

<i>Saccharomyces cerevisiae</i>	3x10 ⁹ UFC
Inulina	5 g

Composición: Pulpa de garrofa tostada y micronizada, inulina de achicoria, cloruro de sodio.

Aditivos/kg: Estabilizadores de la flora intestinal: *Saccharomyces cerevisiae* MUCL39885, 1x10¹² UFC. Agentes ligantes: Sepiolita 100 g.

Componentes analíticos: Proteína bruta 5%; aceites y grasas brutos 0,25%; fibras brutas 5,8%; ceniza bruta 16,5%; sodio 1,9%.

Propiedades y mecanismo de acción:

Probióticos

Para la Organización Mundial de la Salud, los probióticos son «Microorganismos vivos que, cuando son suministrados en cantidades adecuadas, promueven beneficios en la salud del organismo huésped».

Saccharomyces cerevisiae es el único probiótico aprobado en Europa para caballos. Es una levadura, un hongo unicelular, del grupo de los ascomicetos que pasa por ser el producto natural con el contenido más alto en ácidos ribonucleicos y nucleótidos, compuestos con una gran influencia en la actividad del sistema inmune de los animales y en el desarrollo de la flora beneficiosa de estómago e intestino de los caballos.

Además, la pared celular de *S. cerevisiae* está compuesta por Manano-oligosacáridos (MOS), un azúcar manosa muy atractivo para gérmenes patógenos intestinales. *E. coli* y *Salmonella* inician el proceso infeccioso en el intestino con la adhesión de sus fimbrias a las manosas situadas en la superficie de las células epiteliales de la pared. Los MOS evitan esta adhesión compitiendo contra las manosas de la pared por unirse a las fimbrias de la bacteria. En definitiva, los patógenos se unen fundamentalmente a MOS de *S. cerevisiae* libres en el intestino con los que son excretados, evitándose así la infección intestinal.

Por último *Saccharomyces cerevisiae* proporciona altas dosis de vitaminas B, proteínas, péptidos, aminoácidos, enzimas, minerales y otros cofactores importantes de gran valor nutritivo, pero que también desempeñan importantes funciones biológicas mejorando el sistema inmune y el aspecto general del animal, especialmente piel, pelo y uñas.

Beneficios que aportan los probióticos:

- Ayudan a descomponer las proteínas, glúcidos y grasas, mejorando la digestibilidad de los alimentos, la absorción de nutrientes y la eficiencia de la ración.
- Previenen la colonización del tubo digestivo por agentes patógenos.



Características

Promueve el desarrollo de la flora intestinal.

Ayuda a mantener un pH óptimo.

Mejora la digestión y absorción de los nutrientes.

Maximiza la eficiencia de la ración.

Reduce el riesgo de trastornos gastrointestinales y metabólicos.

Ayuda a prevenir cólicos y úlceras gástricas.

Potencia el sistema inmunitario y la salud general.

Disminuye el riesgo de infosura.

Aumenta la producción de leche y mejora la calidad de la misma.

No contiene sustancias dopantes.

Disponible exclusivamente a través de veterinari@s.





- Mantienen niveles de pH adecuados, contribuyendo a la prevención y tratamiento de úlceras gástricas.
- Previenen el estreñimiento al promover una regularidad en las evacuaciones intestinales y al aumentar el volumen de la masa fecal.
- Estimulan el sistema inmunitario y mejoran la salud general.
- Reducen el riesgo de infosura.
- Mejoran el estado de capa y piel.
- Fabrican ciertos nutrientes, como algunas vitaminas del complejo B.
- Mejoran la absorción de calcio, favorecer una buena densidad ósea y mejorar el desarrollo del potro.

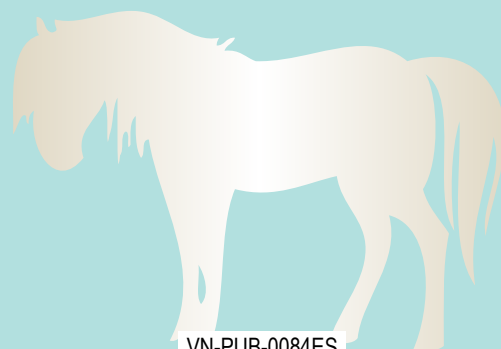
Prebióticos

Los prebióticos son compuestos no digestibles, fermentados selectivamente en el tubo digestivo, que facilitan cambios en la composición y la actividad de la microflora gastrointestinal que se traducen en una mejora de la salud y el bienestar del organismo huésped (Gibson, Probet et al. 2004). Estos compuestos son generalmente azúcares simples (oligosacáridos) como la inulina, lactulosa y oligofructosa. Los prebióticos se diferencian de los probióticos en que no son o aportan bacterias vivas; en su lugar, trabajan con bacterias existentes, ya sea proporcionándoles alimentos o por la mejora del entorno en el intestino. Los prebióticos potencian la eficacia de los probióticos.

La inulina constituye una mixtura polidispersa muy heterogénea de carbohidratos y polímeros sintetizada en la raíz de los vegetales, especialmente de la achicoria, a partir de una molécula de sacarosa. Contiene hasta un 10% de mono y disacáridos, y una serie de oligosacáridos cuya estructura de enlaces β (2-1) es responsable de que no sean digestibles, por lo que tienen un bajo valor calórico, pero un alto valor nutricional como fibra dietética; estos enlaces β (2-1) son resistentes a la acción de las enzimas del intestino delgado y pancreáticas, sin embargo las bacterias Gram negativas del colon sintetizan enzimas sacarolíticas capaces de metabolizarlos; por tanto, la inulina llega en una alta proporción a ciego y colon donde es fermentada y sirve de sustrato a la flora residente. Estudios in vitro han demostrado que la inulina, al ser fermentada en el colon, disminuye el pH intraluminal (por la formación de compuestos ácidos), inhibiendo el crecimiento de *E. coli*, *Clostridium* y otras bacterias patógenas, y estimulando así de manera selectiva el desarrollo de bacterias beneficiosas para la salud. Por último, la producción de gran cantidad de compuestos ácidos durante la fermentación de la inulina, aumenta la absorción de calcio y magnesio.

Indicaciones:

- Regularmente, de forma preventiva, para reponer y equilibrar la flora intestinal.
- Procesos diarreicos agudos de cualquier origen (parasitario, bacteriano, vírico, etc).
- Enfermedades crónicas del intestino.
- Durante y después de una terapia con antibióticos.
- Tratamiento de recuperación tras un cólico o, preventivamente, en caballos que sufren cólicos crónicamente.
- Enterotoxemias e intoxicaciones químicas.
- Úlceras (por su capacidad de regular el pH).
- Situaciones de estrés: destete y otros cambios en la dieta, periodos de estrés ambiental (frío, calor), viajes, entrenamiento intenso o competición, etc.
- Durante el tratamiento hospitalario, post-operatorio y como terapia de recuperación tras cualquier cirugía, enfermedad o lesión importante (para mejorar la digestibilidad de la dieta).
- Estados anoréxicos y/o de astenia.
- Caballos desnutridos, delgados o que tienen dificultad para mantener su peso.
- Alergias y enfermedades autoinmunes.
- Como ayuda en el tratamiento de las infecciones del tracto urinario y prevención de recidivas.
- En yeguas lactantes para estimular la producción de leche y mejorar su calidad.
- Potros recién nacidos, particularmente los que han sufrido un parto largo y/o difícil.





- Potros jóvenes (por ser particularmente sensibles a los gérmenes y parásitos intestinales).
- Caballos geriátricos (por tener procesos de digestión y absorción defectuosos).

Especies de destino: Équidos.

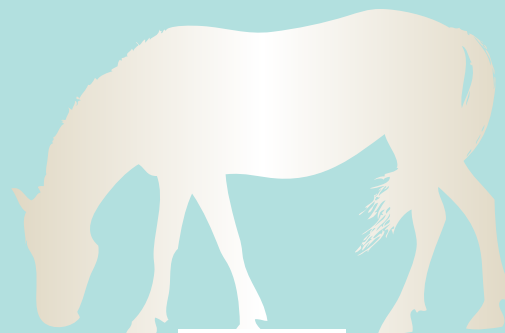
Modo de empleo: Remover el producto antes de su utilización. La medida incluida, hasta la marca, equivale a 30 gramos. Administre cada día, durante al menos 30 días consecutivos, directamente en el comedero o mezclado con la ración: caballos adultos (500 kg), 1 medida; potros y ponis, 1/2 medida.

Advertencias: Este producto no contiene ninguna sustancia prohibida en competición. Guardar el envase bien cerrado, en un lugar fresco, seco, protegido de la luz solar y fuera del alcance de los niños y los animales. Pienso complementario para caballos no destinados a consumo humano.

Presentación: 930 g (31 dosis).

Bibliografía:

- Abrams S., Griffin I., Hawthorne K., Liang L., Gunn S., Darlington G., Ellis K. A combination of prebiotic short- and long-chain inulin-type fructans enhances calcium absorption and bone mineralization in young adolescents. 2005. Am J Clin Nutr 82 (2): 471–6.
- Al Jassim, R.A. Supplementary feeding of horses with processed sorghum grains and oats. 2006. Anim. Feed Sci. Technol. 125:33–44.
- Al Jassim, R.A., Scott, P.T., Trebbin, A.L., Trott, D., Pollitt, C.C. The genetic diversity of lactic acid producing bacteria in the equine gastrointestinal tract. 2005. FEMS Microbiol. Lett. 248:75–81.
- Allen S.J., Okoko B., Martinez E., Gregorio G., Dans L.F. Probiotics for treating infectious diarrhea. Cochrane Database Syst Rev 2003;2:CD003048.
- Ammerman E.Q. Broilers response to the addition of dietary fructooligosaccharides. Poult Sci. 1988;67:46.
- Bailey M.T., Dowd S.E., Parry N.M.A., Galley J.D., Schauer D.B., Lyte M. Stressor exposure disrupts commensal microbial populations in the intestines and leads to increased colonization by Citrobacter rodentium. 2010. Infect. Immun. 78:1509–1519.
- Bailey S.R., Baillon M.L., Rycroft A.N., Harris P.A., Elliott J. Identification of equine cecal bacteria producing amines in an in vitro model of carbohydrate overload. 2003. Appl. Environ. Microbiol. 69:2087–2093.
- Baruc J.C., Dawson K.A., Backer J.P. The characterisation and nitrogen metabolism of equine caecal bacteria. 1983. In: Proc. 8th Symp. Equine Nutr. Phy. Soc., Lexington, KY. p. 151–156.
- Berg E.L., Fu C.J., Porter J.H., Kerley M.S. Fructooligosaccharides supplementation in the yearling horse: Effects on fecal pH, microbial content, and volatile fatty acid concentrations. 2005. J. Anim. Sci. 83:1549–1553.
- Boensma N., Van Weyenberg S., Panneman H., Mulder L., Timmerman H. M., Hesta M., Buyse J., Janssens G.P.J., Van Doorn D.A. The effect of transportation and probiotic administration on the microflora of horses using microbial community profiling and characterization: A pilot study. 2006. In: Proc. 3rd Eur. Equine Health Nutr. Congr., Ghent, Belgium. p. 83–87.
- Brigdi P., Vitali B., Swennen E., Bazzocchi G., Matteuzzi D. Effects of probiotic administration upon the composition and enzymatic activity of human fecal microbiota in patients with irritable bowel syndrome or functional diarrhea. Res Microbiol 2001;152:735–41.
- Bruzzese E., Raia V., Gaudiello G., et al. Intestinal inflammation is a frequent feature of cystic fibrosis and is reduced by probiotic administration. Aliment Pharmacol Ther 2004;20:813–9.
- Castillo M, Martín-Orús S.M., Taylor-Pickard J.A., Pérez-Gasa J.F., J. Use of mannanoligosaccharides and zinc chelate as growth promoters and diarrhea preventative in weaning pigs: Effects on microbiota and gut function. J. Anim. Sci. 2007;86: 94–101
- Cetina-Sauri G., Sierra Basto G. Evaluation thérapeutique de Saccharomyces boulardii chez des enfants souffrant de diarrhée aigue. Ann Pediatr 1994;41:397–400.
- Chambers J.R., Spencer J.L., Modler H.W. The influence of complex carbohydrates on Salmonella typhimurium colonization, pH, and density of broiler ceca. Poult Sci. 1997;76:445–51.
- Chaucheyras-Durand F., Walker N.D., Bach A. Effects of active dry yeasts on the rumen microbial ecosystem: Past, present and future. 2008. Anim. Feed Sci. Technol. 145:5–26.
- Chaucheyras F., Fonty G., Bertin G., Salmon J.M., Gouet P. Effects of a strain of Saccharomyces cerevisiae



Suplemento Probiótico y Prebiótico de Alta Palatabilidad Formulado para Promover un Óptimo Funcionamiento del Aparato Digestivo



FICHA TÉCNICA

- (Levucell SC), a microbial additive for ruminant, on lactate metabolism in vitro. 1996. Can. J. Microbiol. 42:927-933.
- Chen Y., Chen T. Improvement of layer performance by dietary prebiotic chicory oligofructose and inulin. Int J Poult Sci. 2005;4:103-8.
 - Chen Y., Chen T. Effects if chicory fructans on egg cholesterol in commercial layers. Int J Poult Sci. 2005;4:109-14.
 - Cho, S.S. Handbook of prebiotics and probiotics ingredients: health benefits and food applications. 2009. CRC Press.
 - Choi K.H., Namkung H., Paik I.K. Effects of dietary fructooligosaccharides on the suppression of intestinal colonization of Salmonella typhimurium in broiler chickens. Han'guk Ch'uksan Hakhoechi. 1994;36:271-84.
 - Clarke K.R., Owens N.J.P. A simple and versatile micro-computer program for the determination of "Most Probable Number." 1983. J. Microbiol. Methods 1:133-137.
 - Collins S.M., Bercik P. The relationship between intestinal microbiota and the central nervous system in normal gastrointestinal function and disease. 2009. Gastroenterol. 136:2003-2014.
 - Cremonini F., Di Caro S., Covino M., et al. Effect of different probiotic preparations on anti-Helicobacter pylori therapy-related side effects: a parallel group, triple blind, placebo-controlled study. Am J Gastroenterol 2002;97:2744-9.
 - Cuddeford D., Pearson R.A., Archibald R.F., Muirhead R.H. Digestibility and gastro-intestinal transit time of diets containing different proportions of alfalfa and oat straw given to Thoroughbreds, Shetland ponies, Highland ponies and donkeys. 2010. Anim. Sci. 61:407-417.
 - Cummings J.H., Christie S., Cole T.J. A study of fructo oligosaccharides in the prevention of travellers' diarrhoea. Aliment Pharmacol Ther. 2001;15:1139-45.
 - Da Veiga L., Chaucheyras-Durand F., Julliard V. Comparative study of colon and faeces microbial communities and activities in horses fed a high starch diet. 2005. Pferdeheilkunde 21(Suppl. S):45-46.
 - Daly K., Shirazi-Beechey S.P. Design and evaluation of group-specific oligonucleotide probes for quantitative analysis of intestinal ecosystems: Their application to assessment of equine colonic microflora. 2003. FEMS Microbiol. Ecol. 44:243-252.
 - de Fombelle A., Julliard V., Drogoul C., Jacotot E. Feeding and microbial disorders in horses. 1. Effects of an abrupt incorporation of two levels of barley in a hay diet on microbial profile and activities. 2001. J. Equine Vet. Sci. 21:439-445.
 - de Vaux A. Julliard V. Effet d'un probiotique sur la flore bacterienne et la biochimie du caecum chez le poney. 1992. 20ème réunion de l'association française pour la gnotoxémie 17 décembre (Jouy en Josas).
 - Den Hond E.M., Geypens B., Ghooys Y. Effect of high performance chicory inulin on constipation. Nutr. Res. 2000;20:731-736.
 - Desrochers A.M., Dolente B.A., Roy M.F., Boston R., Carlisle S. Efficacy of Saccharomyces boulardii for treatment of horses with acute enterocolitis. 2005. J. Am. Vet. Med. Assoc. 227:954-959.
 - deVrese M., Stegelmann A., Richter B., Fenseau S., Love C., Schrezenneir J. Probiotics compensation for lactose insufficiency. Am J Clin Nutr 2001;73:421-9.
 - Diez M. Influence of a blend of fructo-oligosaccharides and sugar beet fiber on nutrient digestibility and plasma metabolite concentrations in healthy Beagles. Am J Vet Res. 1997;58:1238-42.
 - Durham A.E. The role of nutrition in colic. 2008. Vet. Clin. Equine 25:67-78. Google Scholar
 - Ellegard L., Andersson H., Bosaeus I. Inulin and oligofructose do not influence the absorption of cholesterol, or the excretion of cholesterol, Ca, Mg, Zn, Fe, or bile acids but increases energy excretion in ileostomy subjects. Eur J Clin Nutr. 1997;51:1-5.
 - Finnie I., A. Dwarakanath B. Taylor, Rhodes J. Colonic mucin synthesis is increased by sodium butyrate. 1995. Gut 36:93-99.
 - Flickinger E.A., Van Loo J., Fahey G.C. Jr. Nutritional responses to the presence of inulin and oligofructose in the diets of domesticated animals: a review. Crit Rev Food Sci Nutr. 2003;43:19-60.
 - Freestone P.P.E., Sandrini S.M., Haigh R.D., Lyte M. Microbial endocrinology: How stress influences susceptibility to infection. 2008. Trends Microbiol. 16:55-64.
 - French K.R., Pollitt C.C. Equine laminitis: Loss of hemidesmosomes in hoof secondary epidermal lamellae correlates to dose in an oligofructose induction model: An ultrastructural study. 2004. Equine Vet. J. 36:230-235.
 - Friend T.H. A review of recent research on the transportation of horses. 2001. J. Anim. Sci. 79(E. Suppl.):E32-E40.
 - Fromin N., Hamelin J., Tarnawski S., Roesti D., Jourdain-Miserez K., Forestier N., Teussier-Cuvelle S., Gillet F., Aragno M., Rossi P. Statistical analysis of denaturing gel electrophoresis (DGE) fingerprinting patterns. 2002. Environ. Microbiol. 4:634-343.

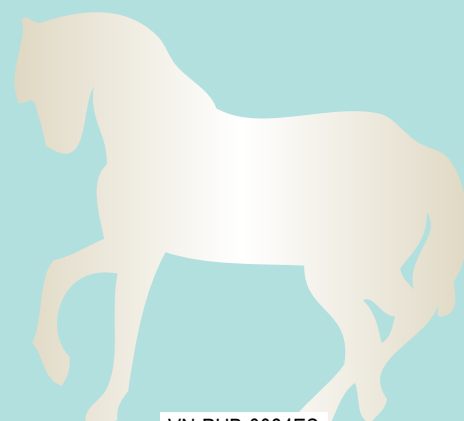




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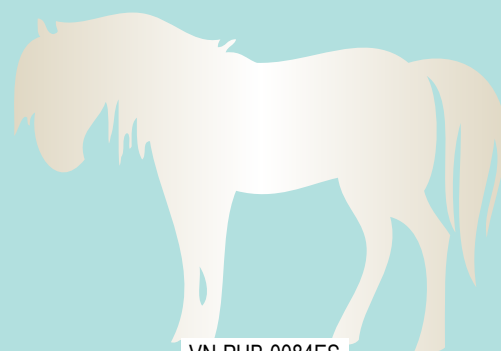
- Garner H., D. Hutcheson, J. Coffman, A. Hahn, and C. Salem. 1977. Lactic acidosis: A factor associated with equine laminitis. *J. Anim. Sci.* 45:1037–1041.
- Garner H.E., Moore J.N., Jonhson J.H., Clark L., Amend J.F., Tritschler L.G., Coffman J.R., Sprouse R.F., Hutcheson D. P., Salem C.A. Changes in the caecal flora associated with the onset of laminitis. 1978. *Equine Vet. J.* 10:249–252.
- Gibson G.R., Probert H., van Loo J., Rastall R.A., Roberfroid M.B. Dietary modulation of the human colonic microbiota: Updating the concept of prebiotics. 2004. *Nutr. Res. Rev.* 17:259–275.
- Gibson G.R., Roberfroid M.B. Dietary modulation of the human colonic microbiota : introducing the concept of prebiotics. 1995. *J. Nutri.* 125: 1401-1412.
- Gibson G., Willis C.L., Van Loo J. Non-digestible oligosaccharides and bifidobacteria: implications for health. *Int Sugar J.* 1994;96:381–7.
- Glade M.J. Dietary yeast culture supplementation of mares during late gestation and early lactation: effects on dietary nutrient digestibilities and fecal nitrogen partitioning. 1991. *J. Equine Vet. Sci.* 11(1): 10-16.
- Glade M.J. Effects of dietary yeast culture supplementation of lactating mares on the digestibility and retention of the nutrient delivered to nursing foals via milk. *J. Equine Vet. Sci.* 11(6): 323-329.
- Glade M.J. Viable yeast culture in equine nutrition. 1992. Supplement to proceedings of Alltech's eighth annual symposium: 1-26.
- Glade M.J., Biesik L.M. Enhanced nitrogen retention in yearling horses supplemented with yeast culture. 1986. *J. Anim. Sci.* 62: 1635-1640.
- Glade M.J., Sist M.D. Dietary yeast cultures supplementation enhances urea recycling in the equine large intestine. 1988. *Nutrition Reports International* 37: 11-17.
- Gluck U., Gebbers J.O. Ingested probiotics reduce nasal colonization with pathogenic bacteria (*Staphylococcus aureus*, *Streptococcus pneumoniae*, and β -hemolytic streptococci). *Am J Clin Nutr* 2003;77:517-20.
- Gerbitz A., Schultz M., Wilke A., et al. Probiotic effects on experimental graft-versus-host disease: let them eat yogurt. *Blood* 2004;103:4365-7.
- Goachet A.G., Philippeau C., Varloud M., Julliard V. Adaptations to standard approaches for measuring total tract apparent digestibility and gastro-intestinal retention time in horses in training. 2009. *Anim. Feed Sci. Technol.* 152:141–151.
- Goachet A.G., Ricard J.M., Drogoul C., Julliard V. Effect of transport on the intestinal ecosystem of the horses. 2003. In: *Proc. 18th Equine Nutr. Phy. Soc., East Lansing, MI.* p. 4–7.
- Gobert J., Bertin G., Julliard V. Digestive fate of *Saccharomyces cerevisiae* CBS 493 94, fed at 3 different concentrations to horses. 2006. *Reprod. Nutr. Dev.* 46(Suppl. 1):S95–S96. (Abstr.)
- Goodson J., Tyznik W., Cline J., Dehority B. Effects of an abrupt diet change from hay to concentrate on microbial numbers and physical environment in the cecum of the pony. 1988. *Appl. Environ. Microbiol.* 54:1946–1950.
- Grønvold A.M.R., L'Abée-Lund T.M., Strand E., Sørum H., Yannarell A.C., Mackie R.I. Fecal microbiota of horses in the clinical setting: Potential effects of penicillin and general anesthesia. 2010. *Vet. Microbiol.* 145:366–372.
- Guslandi M., Mezzi G., Sorghi M., Testoni P.A. *Saccharomyces boulardii* in maintenance treatment of Crohn's disease. *Dig Dis Sci* 2000;45:1462-4.
- Hall R.R., Jackson S.G., et al. Influence of yeast culture supplementation on ration digestion by horses. 1990. *J. Equine Vet. Sci.* 10(2): 130-134.
- Halliwell G., Bryant M. The cellulolytic activity of pure culture strains of bacteria from the rumen of cattle. 1963. *J. Gen. Microbiol.* 32:441–448.
- Hashizume K., Tsukahara T., Yamada K., Koyama H., Ushida K. *Megasphaera elsdenii* JCM1772 normalizes hyper-lactate production in the large intestine of fructooligosaccharide-fed rats by stimulating butyrate production. 2003. *J. Nutr.* 133:3187–3190.
- Hausenblasz J., Szuco J., et al. Effect of viable yeast culture supplementation on nutrient digestibility and feed utilization of growing cold-blooded horses. 1993. 9th Biotechnology in the Feed Industry symposium, Lexington, KY, Alltech Technical Publications.
- He S., Zhou Z., Meng K., Zhao H., Yao B., Ringø E., Yoon I. Effects of dietary antibiotic growth promoter and *Saccharomyces cerevisiae* fermentation product on production, intestinal bacterial community, and nonspecific immunity of hybrid tilapia (*Oreochromis niloticus* female $\times$ *Oreochromis aureus* male). 2011. *J. Anim. Sci.* 89:84–92.
- Hesta M., Janssens G., Debraekeleer J., Millet S., De Wilde R. Fecal odor components in dogs: nondigestible oligosaccharides and resistant starch do not decrease fecal H₂S emission. *J Appl Res Vet Med.* 2003;1:225–32.
- Hesta M., Roosen W., Janssens G., Millet S., De Wilde R. Prebiotics affect nutrient digestibility but not faecal ammonia in dogs fed increased dietary protein levels. *Br J Nutr.* 2003;90:1007–14.
- Hesta M. The effect of oligofructose and inulin on faecal characteristics and nutrient digestibility in healthy cats. *J*





Anim Physiol Anim Nutr (Berl). 2001;85:135–41.

- Hidaka H., Eida T., Takizawa T., Tokunaga T., Tashiro Y. Effects of fructooligosaccharides on intestinal flora and human health. 1986. Bifidobacteria Microflora 5:37–50.
- Hildebrand F., Ebersbach T., Nielsen H.B., Li X., Sonne S.B., Bertalan M., Dimitrov P., Madsen L., Qin J., Wang J., Raes J., Kristiansen K., Licht T.R.A comparative analysis of the intestinal metagenomes present in guinea pigs (*Cavia porcellus*) and humans (*Homo sapiens*). 2012. BMC Genomics. 13:514.
- Hill J. Gutsell S. Effect of supplementation of a hay and concentrate diet with live yeast culture on the digestibility of nutrients in 2 and 3 year old riding school horses. 1998. BSAS annual meeting, Scarborough, UK, BSAS Publ.
- Höchter W., Chase D., Hegenhoff G. *Saccharomyces boulardii* in treatment of acute adult diarrhoea: efficacy and tolerance of treatment. Münch Med Wochen 1990;132:188-92.
- Hu C., Wang Y. Effects of supplemental fructooligosaccharide on growth performance, intestinal microflora and digestive enzymes of finishing pigs. Wuxi Qinggong Daxue Xuebao. 2001;20:568–72, 577.
- Hudson J., Cohen N., Gibbs P., Thompson T. Feeding practices associated with colic in horses. 2001. J. Am. Vet. Med. Assoc. 219:1419–1425.
- Hussein H.S., Flickinger E.A., Fahey G.C. Jr. Petfood applications of inulin and oligofructose. J Nutr. 1999;129:S1454–6.
- Ince J.C., Longland A.C., Moore-Colyer M.C., Newbold C.J., Harris P. Faecal bacteria as markers for population changes in the equine hindgut. 2008. In: Proc. 6th INRA-RRR Symp., Clermont-Ferrand, France. p. 38.
- Isolauri E., Arvola T., Sutas Y., Moilanen E., Salminen S. Probiotics in the management of atopic eczema. Clin Exp Allergy 2000;30:1604-10.
- Jensen M.T., Jensen B.B., Laue A., Agergaard N., Bibby B.M. Effect of various carbohydrate sources on the production of skatole in the hind gut of pigs and skatole concentration in blood plasma. EAAP Publ. 1997;92:80–3.
- Jeusette I., Grauwels M., Cuvelier C., Tonglet C., Istasse L., Diez M. Hypercholesterolaemia in a family of rough collie dogs. J Small Anim Pract. 2004;45:319–24.
- Jouany J.P., Medina B., Bertin G., Julliard V. Effect of live yeast culture supplementation on hindgut microbial communities and their polysaccharidase and glycoside hydrolase activities in horses fed a high-fiber or high-starch diet. 2009. J. Anim. Sci. 87:2844–2852.
- Julliard V., Zeyner A. The pros and cons of probiotics. 6th rev. ed. 2009. In: Robinson N. E., Sprayberry K. A., editor, Current therapy in equine medicine. Saunders Elsevier, St. Louis, MO. p. 83–86.
- Julliard V., de Fombelle A., Varloud M. Starch digestion in horses: The impact of feed processing. 2006. Livest. Prod. Sci. 100:44–52.
- Julliard V. Impact of nutrition on the microflora of the gastrointestinal tract in horses. 2005. Pages 85–103 in Proc. ENUCO, Hannover, Germany. CESMAS, Jülich, Germany.
- Julliard V., Goachet A.G. Fecal microflora as a marker of cecal or colonic microflora in horses? 2005. In: Proc. 19th Equine Soc. Symp. Equine Sci. Soc., Savoy, IL. p. 140–141.
- Julliard V., de Fombelle A., Drogoul C., Jacotot E. Feeding and microbial disorders in horses: 3- Effects of three hay:grain ratios on microbial profile and activities. 2001. J. Equine Vet. Sci. 21:543–546.
- Julliard V., de Vaux A., Millet L., Fonty G. Identification of *Ruminococcus flavefaciens* as the predominant cellulolytic bacterial species of the equine cecum. 1999. Appl. Environ. Microbiol. 65:3738–3741.
- Kalliomaki M., Salminen S., Arvilommi H., Kero P., Koskinen P., Isolauri E. Probiotics in primary prevention of atopic disease: a randomized placebo-controlled trial. Lancet 2001;357:1076-9.
- Kalliomaki M., Salminen S., Poussa T., Arvilommi H., Isolauri E. Probiotics and prevention of atopic disease: 4-year follow-up of a randomized placebo-controlled trial. Lancet 2003;361:1869-71.
- Kelly G. Inulin-type prebiotics—a review: part 1. 2008. Alternative Medicine Review 13 (4): 315–329.
- Kelly G. Inulin-type prebiotics—a review: part 2. 2009. Alternative Medicine Review 14 (1): 36–55.
- Kim S. M., Kim C.M., et al. Evaluation of nutrients values of some feedstuffs, and the effects of yeast culture supplementation on digestibilities of nutrients and blood parameter in horse. 1991. Kor. J. Anim. Nut. 15(5): 272-280.
- Kleessen B., Hartmann J.L., Blaut M. Fructans in the diet cause alterations of intestinal mucosal architecture, released mucins and mucosa-associated bifidobacteria in gnotobiotic rats. Br J Nutr. 2003;89:597–606.
- Konstantinov S.R., Awati A., Smidt H., Williams B.A., Akkermans A.D.L., de Vos W.M. Specific response of a novel and abundant *Lactobacillus amylovorus*-like phylotype to dietary prebiotics in the guts of weaning piglets. 2004. Appl. Environ. Microbiol. 70:3821–3830.
- Kühbacher T., Ott S.J., Helwig U., Mimura T., Rizzello F., Kleessen B., Gionchetti P., Blaut M., Campieri M., Flösch U.R., Kamm M.A., Schreiber S. Bacterial and fungal microbiota in relation to probiotic therapy (VSL#3) in pouchitis. 2006. Gut 55:833–841.
- Lamendella R., Domingo J.W., Ghosh S., Martinson J., Oerther D.B. Comparative fecal metagenomics unveils



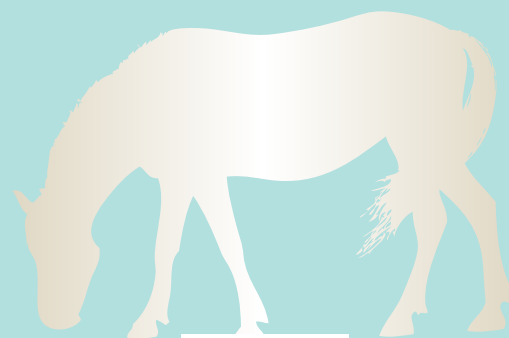


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unique functional capacity of the swine gut. 2011. BMC Microbiol. 11:103.

- Le Blay G., Michel C., Blottière H.M., Cherbut C. Prolonged intake of fructooligosaccharides induces a short-term elevation of lactic acid-producing bacteria and a persistent increase in caecal butyrate in rats. 1999. J. Nutr. 129:2231–2235.
- Leedle J., Hespell R. Differential carbohydrate media and anaerobic replica plating techniques in delineating carbohydrate-utilizing subgroups in rumen bacteria populations. 1980. Appl. Environ. Microbiol. 34:709–719.
- Longland A.C., Cairns A. J., Humphreys M.O. Seasonal and diurnal changes in fructan concentration in Lolium perenne: Implications for the grazing management of equine pre-disposed to laminitis. 1999. Pages 258–259 in Proc. 16th Equine Nutr. Physiol. Symp., Raleigh, NC. Equine Sci. Soc., Savoy, IL.
- Mackie R.I., Heath A.B. Enumeration and isolation of lactate utilizing bacteria from the rumen of sheep. 1979. Appl. Environ. Microbiol. 38:416–421.
- Maczulak A., Dawson K., Baker J. Nitrogen utilization in bacterial isolates from the equine cecum. Appl. Environ. Microbiol. 50:1439–1443.
- Mahious A.S., Gatesoupe F.J., Hervi M., Metailler R., Ollevier F. Effect of dietary inulin and oligosaccharides as prebiotics for weaning turbot, *Psetta maxima* (Linnaeus, C. 1758). 1985. Aquac Int. 2006;14:219–29.
- Majamaa H., Isolauri E. Probiotics: a novel approach in the management of food allergy. J Allergy Clin Immunol 1997;99:179–85.
- Malchow H.A. Crohn's disease and *Escherichia coli*: a new approach in therapy to maintain remission of colonic Crohn's disease? J Clin Gastroenterol 1997;25:653–8.
- Marchand J., Vandenplas Y. Microorganisms administered in the benefit of the host: myths and facts. Eur J Gastroenterol Hepatol 2000;12:1077–88.
- Martin-Rosset W. 1990. L'Alimentation des Chevaux. INRA, Paris, France.
- Mattila-Sandholm T., Blum S., Collins J.K., et al. Probiotics: towards demonstrating efficacy. Trends Food Sci Technol 1999;10:393–9.
- McDaniel A.L., Martin S.A., et al. Effects of *Aspergillum oryzae* fermentation extract on in vitro equine cecal fermentation. 1993. J. Anim.Sci. 71(8): 2164–2172.
- Medina B. Effects de la culture de levures vivantes *Yea SaccR1026* (CBS 493.94), en fonction de deux ratios luzerne/or ge dans un aliment complet granulé, sur le fonctionnement de l'écosystème intestinal du cheval. 2003. Dijon, France, Université de Bourgogne: 159.
- Medina B., Girard I.D., Jacotot E., Julliard V. Effect of a preparation of *Saccharomyces cerevisiae* on microbial profiles and fermentation patterns in the large intestine of horses fed a high fiber starch diet. 2002. J. Anim. Sci. 80:2600–2609.
- Messaoudi M., Rozan P., Nejdi A., Hidalgo S., Desor D. Behavioural and cognitive effects of oligofructose enriched inulin in rats. Br J Nutr. 2005;93 Suppl 1:27–30.
- Messaoudi M., Rozan P., Nejdi A., Bisson J.F., Hidalgo S., Desor D. Assessment of the effects of inulin-type fructans, daily administered during 21 months on biological parameters, emotional state and cognitive function. In press. 2007.
- Miller H.M. Fructo-oligosaccharides enhance weaned pig performance. British Soc Animal Science. 2000;33.
- Miliinovich G.J., Trott D.J., Burrell P.C., Croser E.L., Al Jassim R.A., Morton J.M., van Eps A.W., Pollitt C.C. Fluorescence in situ hybridization analysis of hindgut bacteria associated with the development of equine laminitis. 2007. Environ. Microbiol. 9:2090–2100.
- Montagne L., Le Floch N., Arturo-Schaan M., Foret R., Urdaci M.C., Le Gall M. Comparative effects of level of dietary fiber and sanitary conditions on the growth and health of weanling pigs. 2012. J. Anim. Sci. 90:2556–2569.
- Moore B.E., Newman K.E., Spring P., Chandler V.E. Effect of yeast culture (*Yea-Sacc1026*) on microbial populations and pH in the cecum and colon of the equine. 1994. J. Anim. Sci. 72:252.
- Moore-Colyer M.J.S., Clercq T., Drogoul C., Julliard V. In vivo foregut digestion of starch-based concentrate feeds in horses using the mobile bag technique. 2005. Page 30 in Proc. Applying Equine Sci. BSAS Conf., Cirencester, UK. BSAS, Midlothian, UK.
- Mosoni P., Chaucheyras-Durand F., Béra-Maillet C., Forano E. Quantification by real-time PCR of cellulolytic bacteria in the rumen of sheep after supplementation of a forage diet with readily fermentable carbohydrates: Effect of yeast additive. 2007. J. App. Microbiol. 103:2676–2685.
- Mosoni P., Martin C., Forano E., Morgavi D.P. Long-term defaunation increases the abundance of cellulolytic ruminococci and methanogens but does not affect the bacterial and methanogen diversity in the rumen of sheep. 2011. J. Anim. Sci. 89:783–791.
- Müller C.E., von Rosen D., Udén P. Effect of forage conservation method on microbial flora and fermentation pattern in forage and in equine colon and faeces. 2008. Livest. Sci. 119:116–128.



Suplemento Probiótico y Prebiótico de Alta Palatabilidad Formulado para Promover un Óptimo Funcionamiento del Aparato Digestivo



- Nadeau J. A., Andrews, F.M. et al. Evaluation of diet as a cause of gastric ulcers in horses. 2000. Am. J. Vet. Res. 61(7): 784-790.
- O'Mahony S.M. Early life stress alters behavior, immunity, and microbiota in rats: Implications for irritable bowel syndrome and psychiatric illnesses. 2009. Biol. Psychiat. 65:263-267.
- Oyarzabal O.A. Application of direct-fed microbial bacteria and fructooligosaccharides for Salmonella control in broilers during feed withdrawal. Poult Sci. 1996;75:186-90.
- Pagan J.D. Effect of yeast culture supplementation on nutrient digestibility on mature horses. 1990. J. Anim. Sci. 68(Suppl. 1): 371.
- Pellegrini L., Miliani A., Bergero D. Effetto dei frutto-oligosaccaridi sulla microflora intestinale del cavallo sportivo: Nota pratica. 1999. Riv. Zoot. Vet. 27:49-61.
- Petkevicius S., Knudsen K.E., Nansen P., Roepstorff A., Skjoth F., Jensen K. The impact of diets varying in carbohydrates resistant to endogenous enzymes and lignin on populations of Ascaris suum and Oesophagostomum dentatum in pigs. Parasitology. 1997;114:555-68.
- Potter G.D., Arnold F.F., Housolder D.D., Hansen D.H., Brown K.M. Digestion of small or large intestine in the equine. 1992. Pages 107-111 in Proc. Europäische Konferenz über die Ernährung des Pferdes, Hannover, Germany. Pferdeheilkunde, Berlin, Germany.
- Propst E.L., Flickinger E.A., Bauer B., Merchen N.R., Fahey G.C. A dose response experiment evaluating the effects of oligofructose and inulin on nutrient digestibility, stool quality, and fecal protein catabolites in healthy adult dogs. J. Anim. Sci. 2003;81:3057-66.
- Rastall R.A. Bacteria in the gut: Friends and foes and how to alter the balance. 2004. J. Nutr. 134:2022-2026.
- Rautava S., Kalliomaki M., Isolauri E. Probiotics during pregnancy and breast-feeding might confer immunomodulatory protection against atopic disease in the infant. J Allergy Clin Immunol 2002;109:119-21.
- Reid G. The scientific basis for probiotic strains of Lactobacillus. 1999. Appl. Environ. Microbiol. 65:3763-3766.
- Respondek F., Goachet A.G., Rudeaux F., Julliard V. Effects of short-chain fructo-oligosaccharides on the microbial and biochemical profiles of different segments of the gastrointestinal tract of horses. 2007. Pferdeheilkunde 22:146-150.
- Roberfroid M. Introducing inulin-type fructans. 2005. Br J Nutr. 93 Suppl 1: S13-25.
- Roberfroid M.B. Inulin-type fructans: functional food ingredient. 2007. J. Nutr. 137 (11 suppl): 2493S-2502S.
- Rowe J.B., Lees M.J., Pethick D.W. Prevention of acidosis and laminitis associated with grain feeding in horses. 1994. J. Nutr. 124(Suppl. 1):2742-2744.
- Rycroft C.E., Jones M.R., Gibson G.R., Rastall R.A. A comparative in vitro evaluation of the fermentation properties of prebiotic oligosaccharides. 2001. J. Appl. Microbiol. 91:878-887.
- Sadet-Bourgeteau S., Julliard V. Equine microbial gastro-intestinal health. 2010. In: Ellis A. D., Longland A. C., Coenen M., Miraglia N., editor, The impact of nutrition on the health and welfare of horses. Wageningen Academic Publishers, Wageningen, The Netherlands. p. 161-182.
- Sadet-Bourgeteau S., Philippeau C., Faure C., Julliard V. Comparison of bacterial community structure between right ventral colon, caecum and feces by automated Ribosomal intergenic spacer analysis (ARISA). 2010. In: Proc. 7th INRA-RRI Symp., Aberdeen, UK. p. 57.
- Salminen S., Gibson C., Bouley M.C., et al. Gastrointestinal physiology and function: the role of prebiotics and probiotics. Br J Nutr 1998;80(Suppl 1):147-71.
- Sauvant D., Chapoutot P., Archimède H. La digestion des amidons par les ruminants et ses conséquences. 1994. INRA Prod. Anim. 7:115-124.
- Sauvant D., Perez J.M., Tran G. Tables de composition et de valeur nutritive des matières premières destinées aux animaux d'élevage. 2004. 2nd ed. INRA, Paris, France.
- Savaiano D.A., Abou E.A., Smith D.E., Levitt M.D. Lactose malabsorption from yogurt, sweet acidophilus milk, and cultured milk in lactose-deficient individuals. Am J Clin Nutr 1984;40:1219-23.
- SooBo S. Effects of prebiotics, probiotics and synbiotics in the diet of young pigs [dissertation]. Wageningen (Netherlands): Wageningen University; 2005.
- Spreeuwenberg M., Meijer J., Van Loo J. Inulin increases performance, but does not affect diarrhoea and faecal microbial profiles in E. coli challenged piglets. Poster presented at the Dietary Fibre 2003 symposium, Bio-active carbohydrates for food and feed, 18-21 May 2003, Noordwijkerhout, Netherlands.
- Shipp T.E., Madsen F.C. Synergistic effects: prebiotics and piglet performance. USA Feed Management, 2003. p. 18-22.
- Stull C.L., Morrow J., Aldridge B.A., Stott J.L., McGlone J.J. 2008. Immunophysiological responses of horses to a 12-hour rest during 24 hours of road transport. Vet. Rec. 162:609-614.
- Swanson K., Grieshop C., Flickinger E., Bauer L., Chow J., Wolf B., Garleb K., Fahey G. 2002. Fructooligosaccharides and Lactobacillus acidophilus modify gut microbial populations, total tract digestibilities and fecal protein





- catabolite in healthy adult dogs. J. Nutr. 132(Suppl. 1):3721-3731.
- Thoenner M.B., Pollitt C.C., Van Eps A.W., Milinovich G.J., Trott D.J., Andersen P.H. Acute bovine laminitis: a new induction model using alimentary oligofructose overload. J Dairy Sci. 2004;87:2932-40.
 - Thomsen L.E., Petkevicius S., Knudsen K.E., Roepstorff A. The influence of dietary carbohydrates on experimental infection with *Trichuris suis* in pigs. Parasitology. 2005;131:857-65.
 - Tsukahara T., Iwasaki Y., Nakayama K., Ushida K. Stimulation of butyrate production in the large intestine of weaning piglets by dietary fructooligosaccharides and its influence on the histological variables of the large intestinal mucosa. 2003. J. Nutr. Sci. Vitaminol. (Tokyo) 49:414-421.
 - Tsukahara T., Koyama K., Okada M., Ushida K. Stimulation of butyrate production by gluconic acid in pig cecal digesta and identification of butyrate producing bacteria. 2002. J. Nutr. 132:2229-2234.
 - Van Leeuwen P., Verdonk J.M.A.J., Wagenaars C.M.F., Kwakernaak C. Effects of fructooligosaccharide inclusion in diets on performance before and after inoculations with *Eimeria acervulina* and *Clostridium perfringens* in broilers. 2005. Animal Sciences Group Wageningen UR, Lelystad, Netherlands, Project number 220.13180.04, Report nr. 05/101056: 1-27.
 - Van Leeuwen P., Verdonk J.M.A.J., Wagenaars C.M.F., Kwakernaak C. The effect of three inulin preparations on performance before and after an inoculation with *Salmonella* and *Campylobacter* in broilers. 2005. Animal Sciences Group Wageningen UR, Lelystad, Netherlands, Project nr 825.20552.03, Report No: 05/100651: 1-40.
 - Van Leeuwen P., Verdonk J.M.A.J. The gastro-intestinal degradation of inulin preparations and their effects on production performance and gut microflora in calves. 2004. Animal Sciences Group Wageningen UR, Lelystad, Netherlands, Project nr 825.20552.02, Report No: 04/100287:1-31.
 - Van Loo J. The specificity of the interaction with intestinal fermentation by prebiotics determines their physiological efficacy. Nutr Res Rev. 2004;17:89-98.
 - Van Loo J., Coussement P., de Leenheer L., Hoebeigs H., Smits G. On the presence of inulin and oligofructose as natural ingredients in the western diet. Crit Rev Food Sci Nutr. 1995;35:525-52.
 - Van Loo J., Bosscher D., Janssens G.P. Prebiotic inulin interacts with the caecal fermentation in the horse. Horse health nutrition: Third European Equine Health and Nutrition Congress, 17 and 18 March 2006, Faculty of Veterinary Medicine of Ghent University, Merelbeke, Belgium: 75-82.
 - Venturi A., Gionchetti P., Rizzello F., et al. Impact on the composition of the faecal flora by a new probiotic preparation: preliminary data on maintenance treatment of patients with ulcerative colitis. Aliment Pharmacol Ther 1999;13:1103-8.
 - Waldroup A.L., Skinner J.T., Hierholzer R.E., Waldroup P.W. An evaluation of fructooligosaccharide in diets for broiler chickens and effects on salmonellae contamination of carcasses. Poult Sci. 1993;72:643-50.
 - Weese J.S., Anderson M.E., Lowe A., Penno R., da Costa T.M., Button L., Goth K.C. Screening of the equine intestinal microflora for potential probiotic organisms. 2004. Equine Vet. J. 36:351-355.
 - Wolter R. 1999. Alimentation du Cheval. 2nd ed. France Agricole, Paris.
 - Xu Z.R., Hu C.H., Xia M.S., Zhan X.A., Wang M.Q. Effects of dietary fructooligosaccharides on digestive enzyme activities, intestinal microflora and morphology of male broilers. 2003. Poult. Sci. 82:1030-1036.
 - Yusrizal, Chen T.C. Effect of adding chicory fructans in feed on broiler growth performance serum cholesterol and intestinal length. Int J Poult Sci. 2003;2:214-9.
 - Yusrizal X., Chen T.C. Effect of adding chicory fructans in feed on fecal and intestinal flora. Int J Poult Sci. 2003;2:188-94.
 - Zhang Y., Joergensen H., Fernandez J., Knudsen K. Digestibility of carbohydrates in growing pigs: a comparison between the t-cannula and the steered ileo-caecal valve cannula. Arch Anim Nutr. 2004;58:219-31.
 - Zeyner A. Evaluation of nutritional functional ingredients for improvement of digestive tract health and performance. 2010. In: Ellis A. D., Longland A. C., Coenen M., Miraglia N., editor, The impact of nutrition on the health and welfare of horses. Wageningen Academic Publishers, Wageningen, The Netherlands. p. 254-265.
 - Zoetendal E.G., Akkerman A.D., De Vos W.M. Temperature gradient gel electrophoresis analysis of 16-S rRNA from human fecal samples reveals stable and host-specific communities of active bacteria. 1998. Appl. Environ. Microbiol. 64:3854-3859.

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