

We are Probiotic Makers

Since **1948**, we are committed to improving **health and quality of life** through **science-centred probiotic solutions**.



Company

A rich history dedicated to human nutrition since 1948

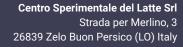
Centro Sperimentale del Latte was the first company in Italy to study **Lactic Acid Bacteria (LAB)** for human health. It was founded by **Dr. Leo Vesely** in **1948** with a mission to improve maternal health and children's nutrition.



Since our beginning more than 70 years ago, we are proud to be a company that **continues to focus on probiotic research and development.**

Today, our expertise helps solving consumer needs in more than **110 countries around the world**, leveraging on our unique proprietary strains and customised blends.





6000+

Proprietary strains in our cell bank

26

Probiotic species manufactured to Nutritional and Pharmaceutical scale

5

Probiotic manufacturing centres with food certification and 3 of them with Pharma GMP across all Sacco System business units



Quality

Our quality shines through R&D excellence

At **Centro Sperimentale del Latte**, we continue to invest in gold-standard probiotic research & development. We are committed to providing the highest quality probiotics for every need and application. We take full control of every aspect, from strain research to stringent technical and quality controls, through to

manufacturing and commercialization



Accreditation

Supporting certifications and documentation



* Please ask your local sales representative for more information





Gastrointestinal (GI) health is central to our overall health and well-being. The role of the GI tract, or gut extends beyond the essential function of **breaking down nutrients from food to nourish our body, it also plays a critical role in protecting it against diseases**.

If GI health is compromised, this may weaken our immune defense and to a greater extent, may even impact our mental health and well-being (via the gut-brain axis).

Healthy **GI function** relies upon a complex ecosystem of bacteria, also know as the gut microbiota. The gut microbiota consists of more than **500 species of bacterial cells** that make up more than 95% of the total cells in human body.

The delicate balance of gut microbiota can be altered through the natural aging process. In addition, the imbalance of the microbiota may also be attributed to a number of factors, including **diet**, **stress**, **diseases** and **medications** - particularly **antibiotics**. Disturbances of microbiota balance may cause occasional **digestive upset**, such as increased **discomfort of gas and bloating after a large meal**, **distress of transient constipation or diarrhea**. In certain cases, the symptoms are prolonged as is the case of **irritable bowel syndrome (IBS) and inflammatory bowel disease (IBD)**.





Normalize bowel function and restore microbiota balance



Mix SYNBIO®

- A blend of Lactobacillus rhamnosus IMC 501[®] and Lactobacillus paracasei IMC 502[®] (1:1)
- Lactobacillus strains isolated from the human faeces of healthy elderly Italians
- The effects of Mix SYNBIO[®] on bowel habits were successfully researched in a large healthy population (898 subjects)

Clinical evidence suggests that **Mix SYNBIO**® may :

- Improve intestinal microbiota balance
- Stimulate the growth and activity of bifidobacteria and lactobacilli in the gut
- Promote natural intestinal regularity and increases faecal volume
- Improve bowel habits of healthy adults



M.C. Verdenelli et al. Eur J Nutr (2009) 48:355–363. IS. Silvi et al.Int J Food Sci Nutr, Early Online: 1–9. I M.C. Verdenelli et al. Letters in Applied Microbiology @ 2011 The Society for Applied Microbiology





Relieve Irritable Bowel Syndrome (IBS) symptoms and gut sensitivity



PENTABIOCEL®

A mixture of 5 strains of lactic acid bacteria and bifidobacteria:

- Lactobacillus plantarum 14D
- Lactobacillus paracasei 101/37
- Bifidobacterium breve Bbr8
- Bifidobacterium animalis ssp. lactis Bi1
- Bifidobacterium breve BL10

Clinical evidence suggests that **PENTABIOCEL®** may:

- **Improve gliadin hydrolysis**, a gluten protein mainly involved in the allergic burden in celiac patients
- Provide effective relief of Irritable Bowel Syndrome (IBS) in celiac patients
- Restore the balance of gut microbiota by increasing beneficial bacteria such as lactobacilli and bifidobacteria



Francavilla et al. J Clin Gastroenterol Volume 53, Number 3, March 2019





Relieve Irritable Bowel Syndrome (IBS) symptoms



Kluveromyces Marxianus Fragilis B0399®

- A natural probiotic yeast that is naturally occurring in kefir and cheese
- Kluyveromyces Marxianus Fragilis B0399[®] is highly resistant to gastric acidity and remains viable upon arrival in the large intestine
- Good adherence and colonization in human intestinal tract
- Helps to balance gut microbiota and promote the growth of beneficial intestinal bacteria, particularly bifidobacteria
- Helps to modulate immune response and attenuates the proinflammatory effect in inflammatory disorders such as Irritable Bowel Syndrome (IBS) and Celiac Disease

Clinical evidence suggests that *Kluyveromyces Marxianus Fragilis* B0399[®] may :

- Improve abdominal distension
- Reduce abdominal pain and bloating
- Improve faecal consistency and bowel regularity



Roda E., Cornia G., isotti A. Minerva Gastroenterol Dietol, 57(Suppl. 1 al N.2): 1 12, 2011.I Sandro A., Camillo S., Hospital Treviso; Clinical results of treatment with the lactic yeast Kluyveromyces B0399 for Irritable Bowel Sindrome. Trial n. 132, updated 2011.I Andreoli S, Gastroenterology Dept., Hospital Santa Maria della Misericordia of Udine, Italy. Clinical trial evaluating the effect of the lactic yeast, Kluyveromyces B0399 on the patients suffering from irritable bowel syndrome. Trial n. 16, 2009





Prevent and promote recovery of diarrhea with early probiotic intervention

Infants Toddlers Juniors

Bacillus coagulans SNZ 1969 (BC4)

- Bacillus coagulans SNZ 1969 is US FDA GRAS approved
- A **clinically proven strain** with safety data for more than 45 years
- Stable at extreme pH levels and high temperature
- A well-documented, safe and stable spore forming bacteria that promotes gastrointestinal health

Clinical evidence suggests that *Bacillus coagulans* SNZ 1969 may :

- **Reduce** the duration of **diarrhea**
- Reduce the total number of sick days
- Be used as an adjuvant therapy with antibiotics for various forms of diarrhea in infancy and childhood



Not Available in US Market

Lucassen PL et al. Arch Dis Child 2001;84:398-403. I Mohammad AP et al. Eur J Pediatr. 2020 Oct;179(10):1619-1626.





Reduce baby crying and improve quality of life for the family



Lactobacillus reuteri LR92

- **Infantile colic** is a functional gastrointestinal disease that affects up to 20% of infants
- **Excessive crying** leads to severe discomfort in the baby and anxiety in their mothers and family
- Probiotics have been suggested to improve the **pain resulting from colic**
- Lactobacillus reuteri is one of the world's most well-researched probiotics for young children
- Clinical study showed that maternal prenatal supplementation with *L. reuteri* LR92 during the last 4 weeks of pregnancy can reduce the occurrence and severity of infantile colic.



Lucassen PL et al. Arch Dis Child 2001;84:398-403. I Mohammad AP et al. Eur J Pediatr. 2020 Oct;179(10):1619-1626.





Urogenital infections are one of the most common reasons women visit a gynaecologist or a urologist. **Bacterial vaginosis (BV), urinary tract infection (UTI)**, and **yeast vaginitis** are the most common urogenital infections which afflict an estimated **1 billion women each year**.

A women's **vaginal microbiome** is made up of a complex ecosystem of more than **200 bacterial species** which is influenced by genes, ethnic background, environmental and behavioural factors. Lactobacillus species constitute the major proportion of vaginal microbiome of women in all life stages. Dominant *Lactobacillus* species in the **vaginal microbiota** include *L. crispatus*, *L. gasseri*, *L. iners and L. jensenii*.

Urogenital health depends largely on the state of the **vaginal microbiome**. The supplementation of probiotics can increase overall number of vaginal beneficial bacteria and reduce the colonization of pathogenic microorganisms, and hence re-establish the microbiome balance. In addition, probiotics can be used in the treatment and prevention of vaginal infections, making them an alternative remedy to antibiotics. This also assists in addressing the problem of bacterial and yeast resistance and decreases reinfection rates.

Nutr Clin Care, Jan/Feb 2002–Vol 5, No.1. I Waigankar and Patel. Journal of Mid-life Health, Jan-Jun 2011,Vol 2, Issue 1.



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Maintain and restore healthy vaginal microbiome



Mix SYNBIO®

- A blend of Lactobacillus rhamnosus IMC 501[®] and Lactobacillus paracasei IMC 502[®] (1:1)
- Lactobacillus strains isolated from the human faeces of healthy elderly Italians
- Mix SYNBIO[®] has been shown in vitro to have strong antimicrobial activity against pathogenic Candida species as well as good colonization and adherence to vaginal surface
- Mix SYNBIO[®] administered in vaginal suppositories is safe and effective way of restoring and maintaining a normal and healthy vaginal microbiome



M. C. Verdenelli et al. Curr Microbiol, Jul 2016, Volume 73, Number 1.1 M.C. Verdenelli et al. Journal of Applied Microbiology ISSN 1364-5072. I M.M. Coman et al. Journal of Applied Microbiology ISSN 1364-5072.





Maintain and restore healthy vaginal microbiome



Lactobacillus plantarum 931

- Originally isolated from healthy female urogenital region.
- L. plantarum LB931 was selected as vaginal probiotics for its ability to inhibit growth of common urogenital pathogens

Clinical evidence suggests that transferring of *L. plantarum* LB931 to the genital tract by using panty liners may:

- Form a microflora barrier to the genital tract
- Increase the number of vaginal lactobacilli
- Prevent Group B Streptococci (GBS) vaginal colonization



P.D.J. Ro"nnqvist et al. Acta Obstetricia et Gynecologica. 2006; 85: 726735. I D. Ro" nnqvist et al. Microbial Ecology in Health and Disease. 2005; 17: 75/82





Maintain and restore healthy vaginal microbiome

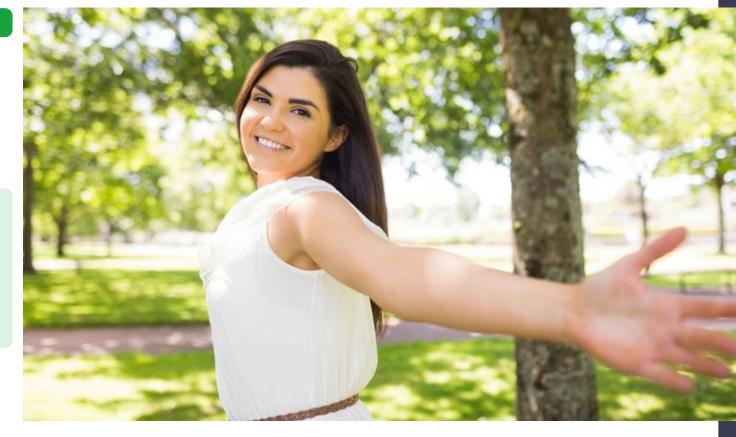


Bacillus coagulans SNZ 1969 (BC4)

- Bacillus coagulans SNZ 1969 is US FDA GRAS approved
- A clinically proven strain with safety data for more than 45 years
- Stable at extreme pH levels and high temperature
- A well-documented, safe and stable spore forming bacteria that promotes urogenital health

Clinical evidence suggests that *Bacillus coagulans* SNZ 1969 may:

- **Reduce vaginosis** symptoms such as white discharge, burning urination, itching and soreness
- Reduce recurrence of vaginal infection
- Improve the cure rate of antibiotic treatment when taken together



Muzumdar et al, Maharashtra Medical Journal, 1984, Vol. XXX, No. 3, June. | Anjaneyulu et al, The Indian Practitioner, 1981, Vol XXXIV, No. 2, 95-98 | Shirodkar et al, The Indian Practitioner, 1980, Vol XXXIII, No.4, 207-210 | International Journal of Probiotics and Prebiotics Vol. 12, No. 4, pp. 175-182, 2017 | Sanholkar P. C. The Indian Practitioner, 1978, Vol XXXI, No. 3, March, 133





Immune Health

The **gut-immunity connection** has a significant impact on our **immune system**. About 70-80% of the body's immune cells reside in our gastrointestinal tract. Keeping a healthy gut with a diverse microbiome is key in supporting a stable and robust immune response which is ready to fight off disease.

Although probiotics are mostly known for their benefits to gut health, the overall ability of some probiotics to boost the immune system allows them to improve extraintestinal health. Use of **probiotics** known for their **immunostimulatory capacity**, have proven to be effective in reducing the incidence of upper respiratory tract infections (URTIs); both as a preventive therapy and as adjuvants for the treatment of viral infections.

International Immunopharmacology 17 (2013) 373–382. I Medicine (Baltimore). 2016 Aug;95(31): e4509.



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Immune Health

Prevent common childhood respiratory tract infections



Lactobacillus rhamnosus CRL1505

- Naturally sourced and isolated from goat's milk
- Total of 13 publications in pre-clinical and clinical studies
- Both live and heat-inactivated Lactobacillus rhamnosus CRL 1505 have shown to exert health benefits to humans
- Lactobacillus rhamnosus CRL1505 has been given to more than 200,0000 children in Argentina as part of the official National Nutritional Program.

Clinical evidence suggests that *Lactobacillus rhamnosus* CRL1505 may :

- Prevent respiratory infections
- Modulate and support the immune system
- Support respiratory health
- Prevent cold and flu
- **Reduce** the number of sick days



BMC Immunology 2013, 14:40.1 International Journal of Biotechnology for Wellness Industries, 2012, 1, 189-198.1 International Journal of Food Microbiology, 2010





Mental Health

The gut-brain axis (GBA) consists of bidirectional communication between the central and the enteric nervous system, linking emotional and cognitive centres of the brain with peripheral intestinal functions. Recent advances in research have described the importance of gut microbiota in influencing these interactions.

Insights into the gut-brain crosstalk have revealed a complex communication system that not only ensures the proper maintenance of gastrointestinal homeostasis, but is likely to have multiple effects on affect, motivation, and higher cognitive functions.

Psychobiotics are a new class of probiotics which, when ingested, confer mental health benefits through interactions with the microbiota-gut-brain axis.

M. Carabotti Annals of Gastroenterology (2015) 28, 203-209 2 K. Skonieczna-Zydecka et al. J. Clin. Med. 2018, 7, 521;



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Mental Health

Relief from stress and improve memory and cognition



Lactobacillus plantarum P-8

Isolated from a traditionally fermented goat milk in north Mongolia. The effects of P-8 on mental health were successfully conducted in human trials.

Clinical evidence suggests that *Lactobacillus planatrum* **P-8** may :

- Improve memory and cognitive functions
- Reduce stress and anxiety symptoms
- Reduce inflammation
- Reduce dysbiosis



Lee-Ching Lew et al, Clinical Nutrition xxx (2018) 1-12 2 Lifeng Wang et al, Nutrition, Volume 30, (2014), P776-783.e1





About **700 types of microorganisms**, including **bacteria**, **fungi and viruses** harbour the oral cavity of the healthy people. The oral cavity has the second largest and most diverse microbiome after the gut.

The oral cavity is not only the initial site of digestion but is a major gateway to the **gastrointestinal tract**. Therefore, a healthy and balanced oral microbiome is crucial to providing the first line of defense for oral cavity and preventing systemic disease development.

The oral microbiome usually exists in the form of a biofilm on the surfaces of the hard and soft tissues of teeth and the oral mucosa. When the homeostasis of oral microbiome is disrupted, certain oral diseases may emerge. Two of the most prevalent diseases in the oral cavity are **dental caries** and **periodontitis**.

R.J. Lamont, H. Koo, G. Hajishengallis, Nat. Rev. Microbiol. 16 (12) (2018) 745–759.I Zaura E, Nicu EA, Krom BP, Keijser BJ. Front Cell Infect Microbiol. 2014;4:85. I Zhao H, Chu M, Huang Z, Yang X, Ran S, Hu B, et al. Sci Rep. 2017;7:11773. Lancet. 2017;390(10100):1211–1259.



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Natural support for fresh breath



Kluveromyces Marxianus Fragilis B0399®

- A probiotic yeast that is naturally occurring in kefir and cheese
- *Kluveromyces Marxianus Fragilis* B0399[®] is highly resistant to gastric acidity and remains viable upon arrival in the large intestine

Clinical evidence suggests that *Kluveromyces Marxianus Fragilis* B0399® may:

- Increase the concentration of good endogenous intestinal flora
- Restore microflora balance
- Improve halitosis by reducing volatile sulphur compounds.



Nachnani S. Compend Contin Educ Dent. 2011;32:22-24. quiz 32, 34. I Cecchini F. et. al. Biomed J Sci & Tech Res 12(1)-2018.





Oral probiotics for caries prevention in early childhood



L. rhamnosus SP1

L. rhamnosus LB21

- Dental caries occur as a result of an imbalance of the oral microbiome
- Streptococcus mutans has been identified as a major cariogenic bacteria for early childhood caries.
- Candida albicans is an pathogen that produces pyruvic acid and acetic acid. These acids are considered to have a significant role in the pathogenesis of caries.
- Clinical evidence shows that *Lactobacillus rhamnosus* exhibits antagonistic activity against cariogenic bacteria

Clinical evidence suggests that:

- Regular supplementation of *Lactobacillus rhamnosus* SP1 may reduce caries development in preschool children
- Regular supplementation of *Lactobacillus rhamnosus* LB21 may reduce caries development, decreased antibiotic use and decreased otitis media in preschool children



Dye BA, Thornton-Evans G, Li X, Iafolla TJ. 2011–2012. NCHS. Data Brief. 2015;(191):1–8. I A. Gomez et al. Cell Host Microbe 22 (3) (2017), 269–278.e3. I P.P. Hujoel et al. Gerodontology (2018). G. Rodríguez et al. Journal of Dental Research 1–6. I C. Stecksén-Blicks, Caries Res 2009; 43:374–381





Oral probiotics for caries prevention in early childhood



Bacillus coagulans SNZ 1969 (BC4)

- Bacillus coagulans SNZ 1969 is US FDA GRAS approved
- A clinically proven strain with safety data for more than 45 years
- Stable at extreme pH levels and high temperature
- A well-documented, safe and stable spore forming bacteria that promotes oral health

Clinical evidence suggests that *Bacillus coagulans* SNZ 1969 may:

- Reduce the cariogenic microorganism, *Streptococcus mutans*
- Reduce gingivitis and plaque formation



G. Jindal et al. European Archives of Paediatric Dentistry 12 (Issue 4), 2011. I Yousuf, et al. Contemporary Clinical Dentistry | Volume 8 | Issue 1 | January-March 2017





Skin Health

The **skin** is the largest organ in the body and and provides the first line of defense against external agents. The skin contains hundreds of microorganisms. The resident **skin microorganisms** form a physical and immunological protective barrier.

The skin microbiome is therefore an essential part of human health, and microbiota imbalance or dysbiosis is thought to cause a range of skin diseases, the most common of which is **acne vulgaris**.

Seo-Yeon P. et al. J. Clin. Med. 2020, 9, 168



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Skin Health

Natural solution for acne

Lactobacillus rhamnosus SP1

- Insulin-like growth factor-1 (IGF1) and forkhead box protein O1 (FOXO1) dysregulation play an important role in the pathogenesis of acne
- IGF1 has acne promoting actions and raised serum IGF1 has been associated with an increased risk of acne in women
- FOXO1 deficiency is linked to acne pathogenesis

Clinical evidence suggests that *Lactobacillus rhamnosus* **SP1** may:

- Modulate the gut-skin axis and restore the intestinal healthy microbiota
- Normalize skin expression of genes involved in insulin signalling (via IGF1 and FOXO1)
- · Lessen the inflammatory process related to acne
- Improve the appearance of acne





Acne vulgaris or more commonly known as acne, is a common inflammatory skin condition that affects up to 90% of teenagers. Acne can cause a pain and scarring that results in low self-esteem and psychosocial distress.

It has been suggested that *Propionibacterium* acnes has a role to play in the pathogenesis of acne via increased sebum production, comedones formation and increased inflammatory response.

G. Fabbrocini et al. Beneficial Microbes, 2016 online | Seo-Yeon P. et al. J. Clin. Med. 2020, 9, 168





Skin Health

Eczema relief in children and infants

Lactobacillus rhamnosus LB21*

 Clinical evidence suggests that Lactobacillus rhamnosus LB21 has positive effects on atopic dermatitis and reduces the use of corticosteroids

Kluveromyces Marxianus Fragilis B0399[®] **

 Clinical evidence suggests that supplementation of *Kluveromyces Marxianus Fragilis* B0399[®] normalizes the IgE level in atopic dermatitis children

Atopic Dermatitis (AD) is the most common skin disorder in infants and children. Atopic conditions are associated with immunoglobulin E-mediated immune responses.

Intestinal dysbiosis has been shown to precede the onset of allergic diseases through altered immune regulation. Studies suggest that probiotics supplementation may modulate intestinal immune response (TH1/TH2 response), stabilizing the intestinal barrier function and reducing gastrointestinal symptoms in children with atopic dermatitis.



Pan SJ et al. Pediatr Allergy Immunol 2010; 21:e659-66. I Özdemir Ö et al. Biomed Res Int 2013; 2013:932391.I 3Tulli A., – Clinic of Dermatology, University of "G. d'Annunzio" Chieti Italy; Preliminary studies on the effects of Kluyveromyces B0399 in patients with atopic dermatitis. Trial n. 75, 2009.





CSL Scientifically Studied Strains

Organisms (Genus and species)	New Taxonomy	Strains	Indication	Billion CFU/ Gram	Pack sizes
SYNBIO®					
- Lactobacillus rhamnosus	Lacticaseibacillus rhamnosus	IMC 501®	Gut Health, Immune Health, Women's Health, Sport Performance, Allergy	100	
- Lactobacillus paracasei	Lacticaseibacillus paracasei	IMC 502®			
PENTABIOCEL®					
- Bifidobacterium breve	(no change)	BL10	- Irritable Bowel Synrome (IBS), Celiac Disease, Gluten sensitivity - -	300	1kg, 5kg,10kg
- Bifidobacterium breve	(no change)	Bbr8			
- Bifidobacterium animalis subsp. lactis	(no change)	Bi1			
- Lactobacillus plantarum	Lactiplantibacillus plantarum	14D			
- Lactobacillus paracasei	Lacticaseibacillus paracasei	101/37			
Bifidobacterium animalis subsp. lactis	(no change)	BLC1	Gut Health, Immune Health	300 & 700	
Bifidobacterium longum	(no change)	SP54		100	
Lactobacillus acidophilus	(no change)	LA3	Gut Health	200	
Lactobacillus acidophilus	(no change)	LA1			
Lactobacillus casei	Lacticaseibacillus casei	BGP93			
Lactobacillus fermentum	Limosilactobacillus fermentum	CS57	- Women's Health	100	
Lactobacillus jensenii	(no change)	KS 121.1			
Lactobacillus reuteri	Limosilactobacillus reuteri	LR92	Perinatal Health, Infantile Colic	200	
Lactobacillus rhamnosus	Lacticaseibacillus rhamnosus	LB21	Skin Health, Atopic Dermatitis, Dental Caries	200	
Lactobacillus rhamnosus	Lacticaseibacillus rhamnosus	SP1	Skin Health, Oral Health, Acne, Dental Caries	300	
Lactobacillus rhamnosus	Lacticaseibacillus rhamnosus	CRL1505	Immune Health, Gut Health, Children Health, Respiratory Health	200	
Lactobacillus paracasei	Lacticaseibacillus paracasei	101/37	Immune Health	200	
Lactobacillus paracasei	Lacticaseibacillus paracasei	Vigiis 101	Gut Health, Immune Health	100	
Lactobacillus plantarum	Lactiplantibacillus plantarum	P-8	Mental Health	300	
Lactobacillus plantarum	Lactiplantibacillus plantarum	WCFS1	Gut Health, Immune Health	300	
Lactobacillus plantarum	Lactiplantibacillus plantarum	LB931	Women's Health	200	
*Lactobacillus plantarum	Lactiplantibacillus plantarum	LPLDL®	Heart Health, Cholesterol Lowering	200	
**Bacillus coagulans	(no change)	SNZ 1969 (BC4)	Gut Health, Neonatal GI Health, Oral Health, Dental Caries	100	- 1kg, 5kg
Klyveromyces marxianus fragilis	(no change)	B0399®	Gut Health, Women's Health, Oral Health, Dental Caries	0,5	

* May not be available in all markets ** Not available in USA







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