

PROBIOTIC LACTIC YEAST®

NEW GENERATION PROBIOTIC

KLUYVEROMYCES B0399® (Turval B0399®)

Kluyveromyces marxianus fragilis B0399

«*K. marxianus B0399®* demonstrated a number of beneficial and strain specific properties desirable for application as a probiotic»

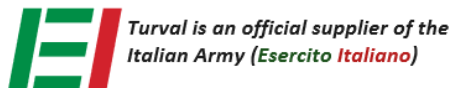
Research published by American Society for Microbiology in the scientific journal
Applied Environmental Microbiology, 2012 Feb; 78 (4)

HISTORY

PRODUCTS

CLAIMS

APPROVALS AND RECOGNITIONS BY NATIONAL AND INTERNATIONAL AUTHORITIES:



for animal use:





Laboratories Turval Biotechnologies
are located in **Udine**
North East of Italy



Probiotic Lactic Yeast® HISTORICAL EVOLUTION

RESEARCH & TECHNOLOGY DEVELOPMENT (strain extracted from Kefir source, selected, characterized; technology production development).

TURVAL B0399 Strain deposit at BCCM/MUCL

MILITARY DIET SUPPLEMENT approved by Italian Ministry of Defense

FOOD SUPPLEMENT FOR HUMANS Italian Ministry of Health

Kluyveromyces B0399® Certified PROBIOTIC Italian Ministry of Health

DAIRY INDUSTRY: "EUFYR" (Coop Italia) "JOGOFIR" (Sava K., Serbia) INTERNATIONAL AWARDS

ESOF 2020 Kluyveromyces marxianus fragilis B0399 International conference

Direct-Fed Microorganism for swine use: MAPA, BRAZIL

1999



Direct-Fed Microorganism for animal use: FDA, USA; CFIA, Canada; EFSA, Europe

ANIMAL HEALTH

- Animals health trials

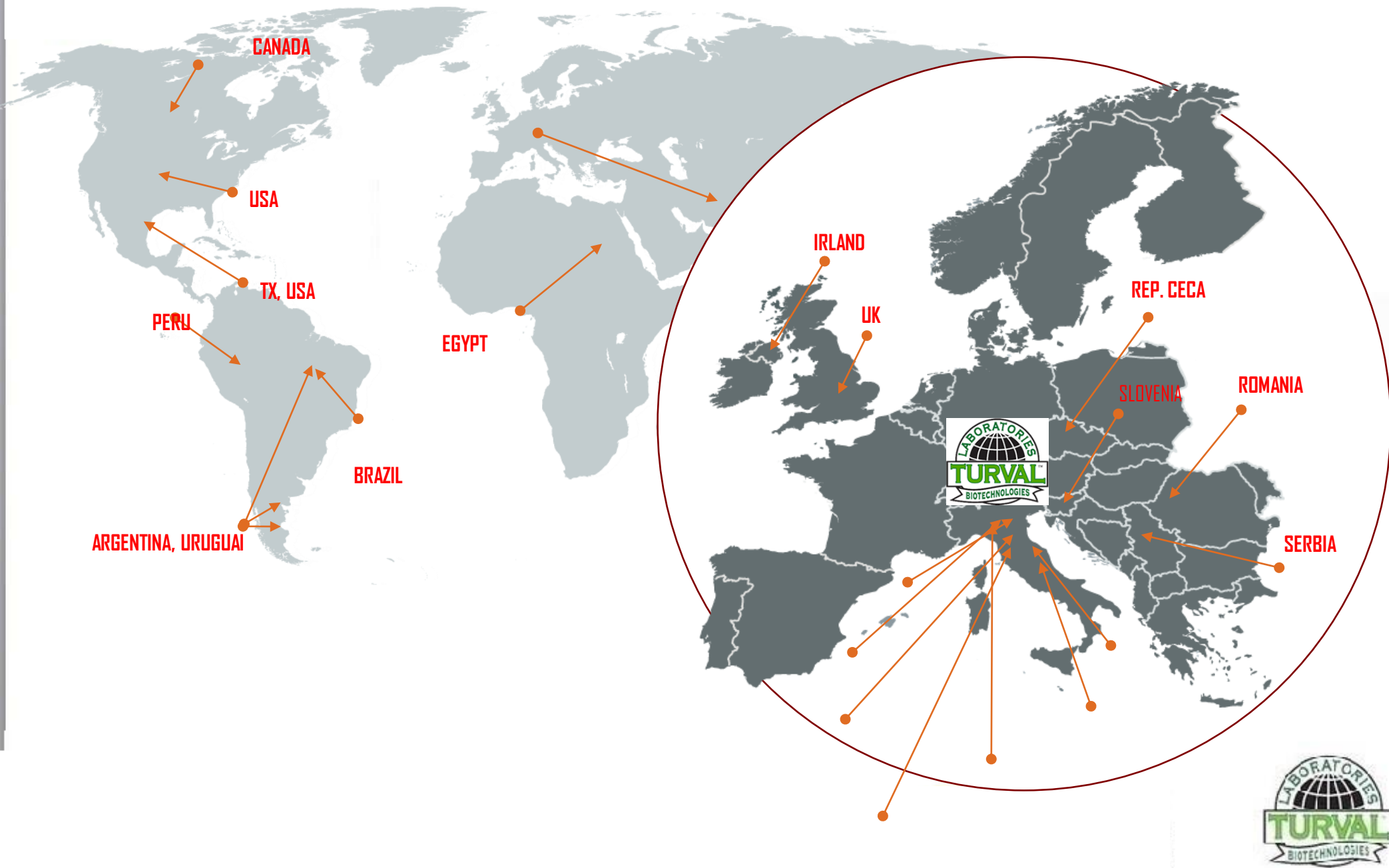
HUMAN HEALTH / NUTRACEUTICAL On the market

-Human Clinical Trials

FUNCTIONAL FOOD On the market

BAKERY APPLICATIONS On the market

GLOBAL NETWORK



TURVAL TEAM



**Alessandro Turello (chemical engineer),
CEO and Co-Founder.**

In 1991, he founded the company TURVAL Laboratories as a biotechnological sector of the group Biochemio srl. With the rest of the Turval team he perfected and patented one of the most innovative and effective probiotics for human and zoo-technological use present on the international market. In decades to come eng.Turello supervised numerous research studies which brought multiple national and international approvals



**Paolo Valles (grad. biologist),
Co-Founder**

By 1992 he joined Turval Labs.as a co-founder, and Project Lead working on enhancement of the probiotic, lactic fermentation by yeasts selected to be used in the animal health; in parallel he was working on development of new biotechnology production techniques (patented). Today he is Technical Director of Livestock Feed Supplement Division and Shareholder.



**Ana Backovic
(Ph.D in Molecular Biology
& Biotechnology)**

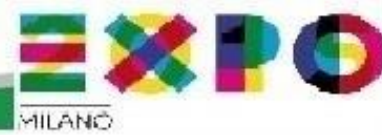
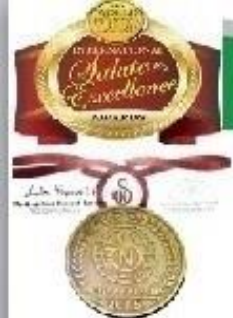
Joined Turval in 2014 as a head of international research project between Turval Laboratories and Faculty of Agriculture, Univ. of Novi Sad (Serbia); As a Project Manager she is responsible for all phases of New Product Development (protocol design, process optimization on small scale, implementation in production scale) to Launch (scientific marketing, support to commercialization); her current research focus is on developing new applications within Dairy, Beverage Ind., Chocolate Industry & Sports Nutrition.



**Francesca Cecchini
(Food Technologist, PhD)**

Joined Laboratories Turval in 2017. She is involved in Quality Control, Regulatory Practices, R&D activities in human area. She is head of different projects regarding new applications of *Kluyveromyces marxianus* B0399®. She is involved in all phases of New Product Development: from protocol design to optimization on industry scale and launch. Furthermore she is responsible for Internal Accounting, Sale Office and Customer Relationship Management (including national and international orders and e-commerce sales).





KLUYVEROMYCES B0399 (TURVAL B0399®)

IS A SECURE INVESTMENT:

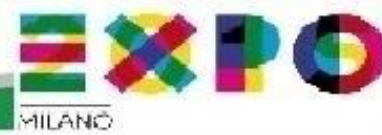
-SAFE DEPOSIT STRAIN

-IDENTIFICATION AND RECOVERY

- OFFICIAL APPROVALS

- TRADE MARK





INTERNATIONAL SAFE DEPOSIT

Kluyveromyces marxianus fragilis B0399

(TURVAL B0399)

dated April 1999 c/o BCCM/MUCL

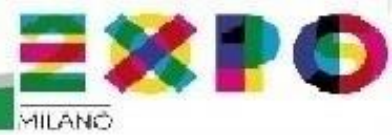
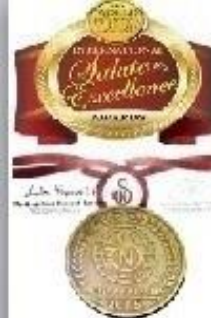
(MUCL accession number 55798)

(Belgium Federal Office for Scientific technical and cultural affairs)

The International Belgian Collection of Microorganism
Deposit reference number obtained.

Validity: **worldwide.**





IDENTIFICATION and RECOVERY

1. **Full genome sequencing** of *Kluyveromyces B0399*[®] by **University of Verona** and **IGA** (Applied Genome Institute), Udine.

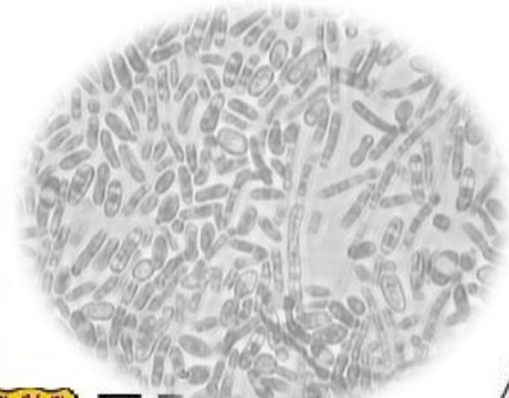
The entire sequence is deposited in NCBI Genome Bank (N. LXZY00000000).



Your investment in this active ingredient is now even more secure!

2. **Vital count** at the microscope with **Burker chamber**.

The method was made official in 2014 during the workshop with Coop Italia, ISS (Istituto Superiore della Sanità), University of Udine, AAT (Spinoff of University of Piacenza), Labomar, Casteggio Lieviti AB Mauri.



APPROVALS by Competent Authority



Italian Ministry of Health
Ministero della Salute

Italian Ministry of Health: dossier Constituent *Kluyveromyces B0399*. **Approved as a probiotic** by the Ministry of Health (2009) Prot. n.19675. Cfr. Probiotic guides 2005.

European Food Safety Authority (EFSA): The use in piglets feedstuff of the constituent *Kluyveromyces marxianus-fragilis B0399* (TURVAL B0399®). Cfr. Art 5 of the Commission Regulation (EC) No 773/2006 of 22 May 2006 to 2010.



Food and Drug Administration (FDA): Approval of the feed supplement containing the strain *Kluyveromyces B0399* (TURVAL B0399®) and the label: obtained: dated Sept 6th 2005 Ref. DAF 0213.

Canadian Food Inspection Agency (CFIA): Approval of the viable microbial strain *Kluyveromyces B0399* (TURVAL B0399®) obtained on April 19th, 2004.



Others:

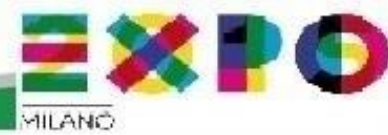
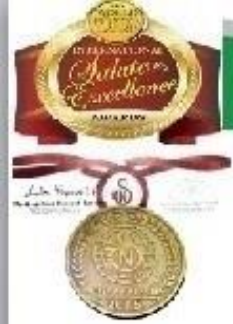
Germany, GB, Ireland, Argentina, Uruguay, Egypt, and Thailand.



TRADEMARKS



- B0399[®] (various Countries)
- Bioval[®] (various Countries)
 - Lievilactis[®] (in Italy)
- Turval[®] (various Countries)
- Probiotic Lactic Yeast[®] (various languages and Countries)
- Probiotico amico[®] (various languages and Countries)
- Lievito amico[®] (various languages and Countries)



TURVAL TRADEMARKS and most used **KEYWORDS**

improve **THE WEB VISIBILITY** of
the **PRIVAT LABEL**
containing *Kluyveromyces B0399*[®]



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



University of
Reading
United Kingdom



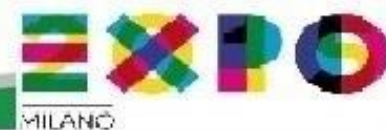
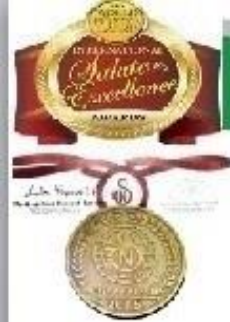
UNIVERSITÀ
di VERONA



UCC

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh





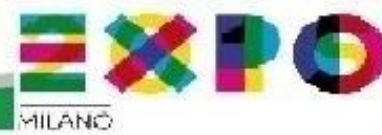
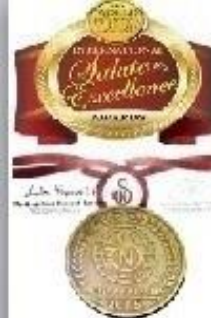
High visibility on the web

(on google searching engine)

Rev. November 2016

Keyword search for trademarks Turval	Number of links
Kluyveromyces B0399®	1590
Yeast B0399®	3160
Probiotic-Lactic-Yeast®	1470
Turval®	90500
Lievito-Lattico-Probiotico®	582

Keyword results highlights the location of the company Turval or one of its products	Subject display	Location on the first page of the search engine
Kluyveromyces	Turval company and site	7
Kluyveromyces	B0399 strain	8
Kluyveromyces fragilis	Kluyveromyces B0399	2 e 3
Kluyveromyces marxianus	Kluyveromyces B0399	4 e 8
B0399	Kluyveromyces B0399	1 e oltre

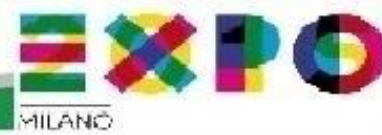
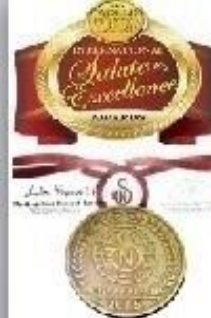


Keyword on Google:

Kluyveromyces B0399
(First page on Google)

The screenshot shows a desktop environment with a taskbar on the left containing icons for 'Cesant', 'Jan 2017', 'LibreOffice', 'Motorola Desktop 5', 'Mozilla Firefox', 'MyPhone', 'Scanne Mouse', and 'Shortcut handset'. On the right, a list of search results for 'Kluyveromyces B0399' is displayed. Red arrows point from the desktop icons to the corresponding search results:

- From the 'Cesant' icon to the first search result: **Candida albicans: Kluyveromyces B0399 active competitor — Turval**
- From the 'Jan 2017' icon to the second search result: **EXPERTISE: Dosaggio giornaliero di lievito lattico Kluyveromyces ...**
- From the 'LibreOffice' icon to the third search result: **Probiotic Lactic Yeast® Kluyveromyces B0399 : immune system ...**
- From the 'Motorola Desktop 5' icon to the fourth search result: **Lactic yeast Kluyveromyces B0399 (Kluyver B0399) on patients ...**
- From the 'Mozilla Firefox' icon to the fifth search result: **Full Text - Applied and Environmental Microbiology - American Society ...**
- From the 'MyPhone' icon to the sixth search result: **Survival of the functional yeast Kluyveromyces marxianus B0399 in ...**
- From the 'Scanne Mouse' icon to the seventh search result: **Potential probiotic Kluyveromyces marxianus B0399 modulates - NCBI**
- From the 'Shortcut handset' icon to the eighth search result: **IP® Sintesi pubblicazioni su Kluyveromyces marxianus B0399 - Coop**
- From the 'Shortcut handset' icon to the ninth search result: **Coop fa R&S con l'università e lancia due novità a marchio per il ...**
- From the 'Shortcut handset' icon to the tenth search result: **BioVal plus: informative sheet — Turval - Home page Agrilife**



Keyword on Google:

Probiotic Lactic Yeast (First page on Google)

Search results for 'Probiotic Lactic Yeast':

- Probiotic Lactic Yeast @ Kluyveromyces B0399 : immune system ... www.turval.com/.../probiotic-lactic-yeast-r-kluyveromyces-b0399-immune-system-sti... Probiotic Lactic Yeast @ Kluyveromyces B0399 : immune system stimulation, gut colonization , bifidobacteria increase and other probiotic effctos.; Trial 143: ...
- PROBIOTIC LACTIC YEAST @ (Turval B0399 @) — Turval www.turval.com/products/humans/probiotic-lactic-yeast/ PROBIOTIC LACTIC YEAST @ (Turval B0399 @). DOWNLOAD OF FULL TEST DEPLIANT ABOUT ACTIVE INGREDIENT, USERS AND AWARDS
- PDF probiotic lactic yeast - Turval www.turval.com/products/humans/depliant-turval-b0399/ PROBIOTIC LACTIC YEAST@ BROUGHT MULTIPLE AWARDS TO. YOGURTS PRODUCERS FOR THE MOST INNOVATIVE PRODUCT. EUROPEAN AWARD.
- Lactic yeast Kluyveromyces B0399 (Kluyver B0399) on patients ... www.turval.com/research/humans_and_nutrition/trials-with-bioval-plus/ Innovative Probiotic Lactic Yeast for the pharmaceutical, nutritional and agricultural Yogurt with Kluyveromyces B0399; Functional food · Probiotic Lactic Yeast ...
- Probiotic Lactic Yeast Biovibrands www.biovibrands.com/category/blog/probiotic-lactic-yeast/ Antioxidant Recipes: Don't Choke on Aronia Berries! Aronia Berries have a terrible reputation for tartness—thus the common name, Chokeberry. But they also ...
- BioVi (contiene Kluyveromyces B0399)
- The Difference Between Probiotic Bacteria and Probiotic Lactic Yeast ... www.biovibrands.com/the-difference-between-probiotic-bacteria-and-probiotic-lactic-yeast/ The Difference Between Probiotic Bacteria and Probiotic Lactic Yeast. Probiotic digestive system supplements are on the rise, but unless you have a chemistry ...
- Why To Include Probiotic Lactic Yeast in Your Diet Biovibrands www.biovibrands.com/why-to-include-probiotic-lactic-yeast-in-your-diet/ Why To Include Probiotic Lactic Yeast in Your Diet. Probiotics are cultures composed of bacteria or yeast that offer a wide range of benefits for your body. Lactic ...
- Why You Should Take Lactic Yeast Based Probiotics Biovibrands www.biovibrands.com/why-you-should-take-lactic-yeast-based-probiotics/ ... cure for yeast infections · DRAC · pH Levels · Polyphenols · Probiotic Lactic Yeast · Probiotics · Sports · Sports nutrition · Traveler's Diarrhea · What Causes IBS ...
- BioVi (contiene Kluyveromyces B0399)
- Draft Genome Sequence of the Probiotic Yeast Kluyveromyces ... - NCBI <https://www.ncbi.nlm.nih.gov/pubmed/26811111> NCBI Literature PubMed Central (PMC) by S. Quarella · 2016 · Related articles The probiotic lactic yeast Kluyveromyces marxianus fragilis B0399 (TURVAL B0399) is a strain belonging to a species naturally occurring in ...
- Probiotic Lactic Yeast Queasy Stomach For – krbo line www.krbo.info/dh380-probiotic-lactic-yeast-queasy-stomach-for/ Probiotic Lactic Yeast Queasy Stomach For. Physical exam: Screening is ordinarily done by feeling the prostate by inserting a finger into the rare types of rectal ...



Keyword on Google:

Kluyveromyces fragilis

(First page on Google)

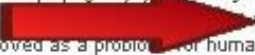
Kluyveromyces marxianus - Wikipedia ✓

https://en.wikipedia.org/wiki/Kluyveromyces_marxianus ▼

Kluyveromyces marxianus is a species of yeast in the genus Kluyveromyces, and is the sexual form (teleomorph) and proper name of Candida kefyr.

yeast kluyveromyces fragilis: Topics by Science.gov ✓

www.science.gov/topicpages/y/yeast+kluyveromyces+fragilis.html ▼

Here, we report  of Kluyveromyces marxianus fragilis B0399, the first yeast approved as a probiotic for human consumption not ...

Optimal fermentation conditions for maximizing the ethanol production ... ✓

www.sciencedirect.com/science/article/pii/S0961953411000602 ▼

by G Dragone - 2011 - Cited by 45 - Related articles

Kluyveromyces fragilis (Kf1) from the culture collection of the Centre of Biological Engineering, University of Minho (Portugal), was the yeast strain employed in ...

EXPERTISE: Valutazione del lievito lattico Kluyveromyces marxianus ... ✓

www.turval.com/.../expertise-valutazione-del-lievito-lattico-kluyver... ▼ Translate this page

EXPERTISE: Valutazione del lievito lattico Kluyveromyces marxianus fragilis B03999 ai sensi delle linee guida del min. della Salute Dic 2005 All 1.

Kluyveromyces fragilis as an opportunistic fungal pathogen in man. ✓

www.ncbi.nlm.nih.gov/pubmed/6988992 ▼

An immunosuppressed cardiac transplant patient with pulmonary infection due to the yeast Kluyveromyces fragilis is described. Isolation of this fungus from ...

Lipid-Enhanced Ethanol Production by Kluyveromyces fragilis - NCBI ✓

<https://www.ncbi.nlm.nih.gov> > NCBI > Literature > PubMed Central (PMC)

by JH Janssens - 1983 - Cited by 70 - Related articles

Abstract. The fermentation ability of a strain of Kluyveromyces fragilis, already selected for rapid lactose-fermenting capability, was improved dramatically by the ...

Nutritional profile of food yeast Kluyveromyces fragilis biomass grown ... ✓

<https://www.ncbi.nlm.nih.gov/pubmed/11998844>

by D Paul - 2002 - Cited by 30 - Related articles

Biomass of food yeast Kluyveromyces fragilis (MTCC 188) grown on deproteinized whey supplemented with 0.8% diammonium hydrogen phosphate and 10 ...

Kluyveromyces fragilis - MycoBank ✓

www.mycobank.org/BioMICS.aspx?TableKey=14682616000000067&Rec... ▼

Kluyveromyces fragilis (A. Jörg.) Van der Walt, Bothalia 10 (3): 417 (1971) [MB#316057]

Batch cultivation of kluyveromyces fragilis in ... - Wiley Online Library ✓

onlinelibrary.wiley.com/doi/10.1002/ejce.5450590420/pdf ▼

Kluyveromyces fragilis was cultivated batchwise in an open pond rectangular bioreactor at 30°C, ... fermentation of CW by K. fragilis for the production of the high ...

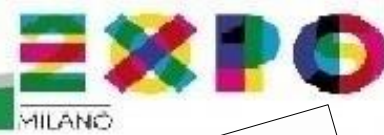
Kluyveromyces Fragilis as an opportunistic fungal pathogen in man ✓

sabouraudia.oxfordjournals.org/content/18/1/69.abstract

by LI Lutwick - 1980 - Cited by 19 - Related articles

Abstract. An immunosuppressed cardiac transplant patient with pulmonary infection due to the yeast Kluyveromyces fragilis is described. Isolation of this fungus ...

WHAT WORLD SAYS ABOUT US...



Messaggero Veneto
MERCOLEDI 28 GIUGNO 2006

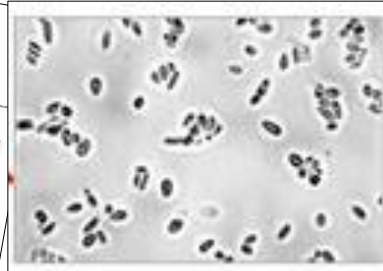
CRONACA DI UDINE

Medicinale naturale inventato a Udine ha ricevuto il via libera della Sanità Usa

Lievito probiotico regolatore dell'intestino e resistente agli antibiotici è stato brevettato dalla Turval Laboratories con sede nel Parco scientifico alla Zia

di GIACOMINA PELLIZZARI

MESSAGGERO VENETO 04/11/08



Novos probióticos no mercado de leites fermentados: agora é a vez das leveduras?

UDINEECONOMICA

APR. 2001

L'azienda di Pradamano è specializzata nella produzione di prodotti probiotici

Che buono il Parmigiano Reggiano! Merito anche della Turval

MEDICINA ALIMENTARE

Prodotti Fvg al servizio dell'Esercito

Un integratore friulano per i soldati in Afghanistan

Un probiotico friulano per l'esercito italiano. Di recente a Senigallia si sono infatti tenuti il dodicesimo convegno dei generali e un particolare lievito lattico, ritenendolo molto più efficace dei generati fuori regione.

Turval Laboratories and CCWW ONLUS to form pediatricians and nurses / I Laboratori Turval e la CCWW ONLUS collaborano per la formazione di medici pediatrici e infermieri

The Turval Laboratories cooperates with the ChildCare World pediatricians and nurses in specific...

RICERCA

Il lievito "bio-friulano" premiato a Verona

Turval, impresa innovativa settore delle biotecnologie, è stata premiata al Parco scientifico Friulano dal 2005.

RICONOSCIMENTO INTERNAZIONALE

Yogurt probiotico da Guinness

Nato dalla collaborazione tra Coop e Parco scientifico di Udine

UDINE

Premio allo yogurt bio friulano

Lo yogurt prodotto con lievito probiotico Turval B0399 nato al Parco scientifico di Udine, è stato premiato come miglior yogurt di laboratorio Turval nel 2005 al Parlamento Europeo.

NEW ENGLAND JOURNAL OF
Large Animal Health

Published By The New England Animal Health Institute

48 #FRIULI BUSINESS

AZIENDE TERZIARIO

Probiotici anche per intolleranti

UDINETODAY

A Expo 2015 anche Eufyr, lo yogurt nato al parco scientifico e tecnologico di Udine

NOVI PROBIOTICI NA TRŽIŠTU FERMENTIRANIH

Red je na kvasce:

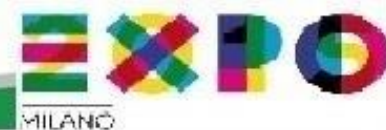
VELIKA vest je da na srpsko tržište izlazi probiotički fermentisani mlečni napitak nove generacije, koji sadrži žive ćelije probiotičkog mlečnog kvasca* (Kluiveromyces marxianus fragilis B0399).

Probiotici su živi mikroorganizmi koji, pri redovnom unosu u adekvatnoj dozi, rade

TURVAL 5 CAMELIDS DAILY

"I have been studying Turval 5 Camelids Daily for use in llamas and alpacas for the past 6 months. This product is a combination of probiotic organisms and minerals with the goal to improve digestion by stabilizing the..."

TURVAL - LA MAPPATURA DEL DNA DEL LIEVITO BREVETTATO AIUTERÀ L'AZIENDA UDINESE A SVILUPPARE PRODOTTI PER LE PERSONE CHE NON DIGERISCONO IL LATTOSIO



PROBIOTIC LACTIC YEAST® BROUGHT MULTIPLE AWARDS TO YOGURTS PRODUCERS FOR THE MOST INNOVATIVE PRODUCT

EUROPEAN AWARD

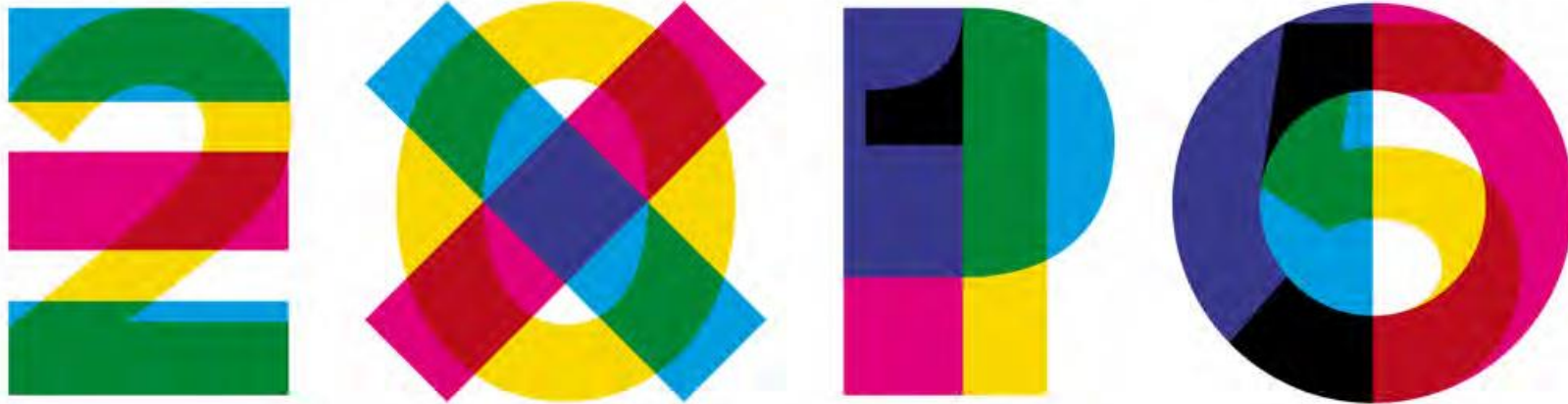
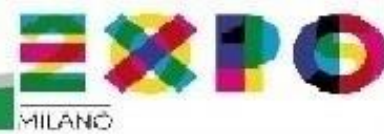
IN **2014** "EUFYR POMEGRANATE", PRODUCED BY ONE OF THE BIGGEST ITALIAN RETAILERS, COOP – ITALY, WINS PRESTIGIOUS

PLMA'S INTERNATIONAL "SALUTE TO EXCELLENCE" AWARD

IN AMSTERDAM; **EUFYR** IS THE WINNER AMONG 210 PRODUCTS SUBMITTED BY 45 RETAILERS FROM 16 EUROPEAN COUNTRIES FOR THE BEST INNOVATION IN PRIVATE LABEL.



HUMAN NUTRITION



MILANO

EUFYR [COOP, ITALY], THE FIRST COMMERCIALISED PROBIOTIC YOGURT CONTAINING *KLUYVEROMYCES B0399*[®], **WAS CHOSEN FOR** THE UNIVERSAL EXHIBITION **EXPO 2015** AS AN EXAMPLE OF LEADING INNOVATION IN FUNCTIONAL DAIRY PRODUCTS.

NEW GENERATION PROBIOTIC YOGURT

WITH PROBIOTIC LACTIC YEAST[®] COOP ITALY

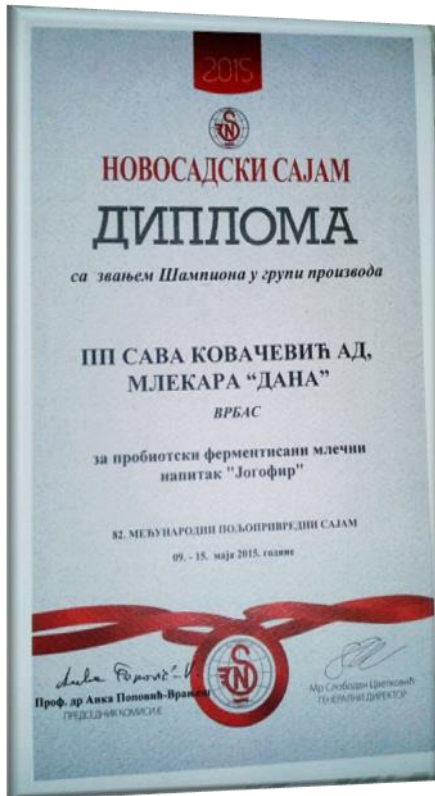


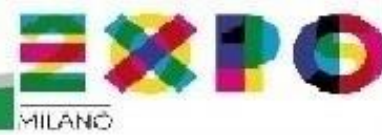
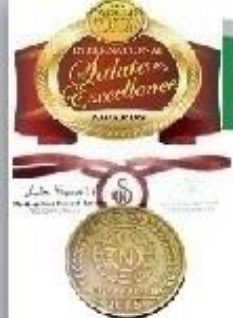
EASTERN EUROPEAN AWARD

IN **2015** *KLUYVEROMYCES B0399*[®] BRINGS THE SECOND INTERNATIONAL AWARD TO THE INNOVATIVE PROBIOTIC FERMENTED MILK BEVERAGE "**JOGOFIR**", PRODUCED BY THE AGRICULTURAL COMPANY "**SAVA KOVACEVIC** - DAIRY DANA" (SERBIA).

82nd INTERNATIONAL AGRICULTURAL FAIR OF NOVI SAD, SERBIA

NOMINATED **JOGOFIR** THE "**CHAMPION OF QUALITY AND INNOVATION**".






Kluyveromyces B0399 **(TURVAL B0399®)**

chosen by Italian Ministry of Defense
 (prot. n. 054236)



 *Turval is an official supplier of the
 Italian Army (Esercito Italiano)*





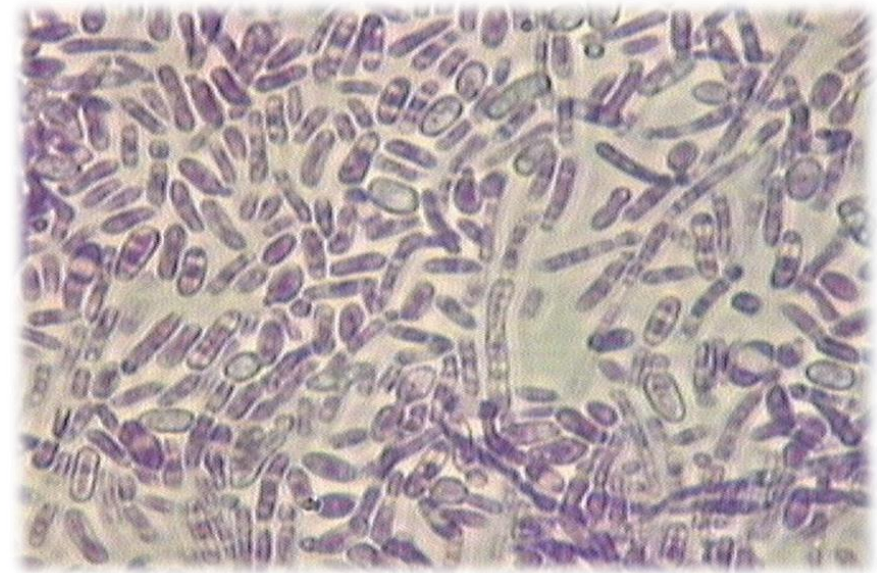
THE ACTIVE INGREDIENT

STRAIN *Kluyveromyces* B0399®

The basic product is the new generan of probiotics.

It has also prebiotic, paraprobiotic, and symbiotic effects.

Probiotic Lactic Yeast™
***Kluyveromyces* B0399®**
(TURVAL B0399®)



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



University of
Reading
United Kingdom



UNIVERSITÀ
di VERONA



UCC

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh



Probiotic:

«Live microorganisms which when administered in adequate amounts confer a health benefit on the host» (by FAO and WHO-*Health and Nutritional Properties of Probiotics in Food 2001*)



Paraprobiotic paradox:

“Live and dead cells are biological response modifiers” (Adams CA. *Nutr Res Rev.* 2010 Jun;23(1):37-46)

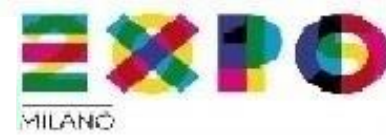
...the probiotic paradox is that both live and dead cells in probiotic products can generate beneficial biological responses.

So the new term “**Paraprobiotic**” indicates the use of inactivated microbial cells or cell fractions to confer a health benefit to the consumer.

Prebiotic:

“A prebiotic is a non-viable food component that confers a health benefit on the host associated with modulation of the microbiota”

SCIENTIFIC COLABORATIONS WITH UNIVERSITIES & INSTITUTES



International Collaborations:



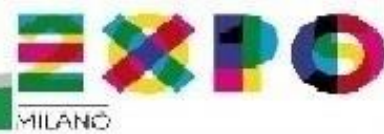
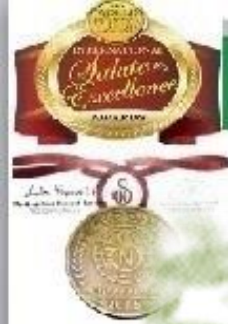
- **Reading University (UK)**
Department of Food and Nutritional Science
- **University College Cork (IR)**
Department of Microbiology
- **Ohio State University (USA)**
- **North Carolina State University (USA)**
- **University of Nevada, Las Vegas (USA)**
School of Life Sciences and
Nevada Institute of Personalized Medicine
- **University of Novi Sad (Serbia)**
Faculty of Agriculture, Dairy Dept.
- **University of Nebraska (USA)**
- **Nairobi University (Kenya)**
Institute of Technical Nutrition

National Collaborations:



- **Scientific Park – (Italy):**
Genomic Institute IGA
ASA Azienda Speciale Ambiente (CCIAA-UD)
Transactiva Srl.
- **Verona University (Italy):**
Department of Biotechnology
- **Udine University (Italy):**
Animal Production Dept
Foods Sciences Dept.
- **Perugia University (Italy):**
Agro-Biotechnologies Dept.
- **Bologna University (Italy):**
Department of Pharmaceutical Sciences
- **AREA Science Park – Trieste**
Bracco Imaging SPA

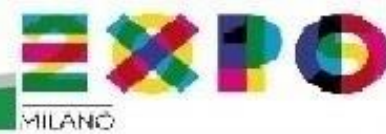
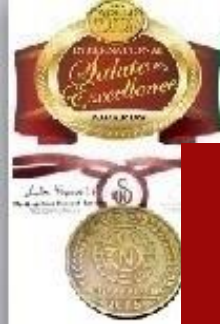




The innovative properties of *Kluyveromyces B0399* (TURVAL KB0399®) are evaluated and supported by **research activity**
(**>200 vet and clinical** trials)

Most work has been evaluated by National and
International **scientific commissions.**

The most relevant studies are reported in the next slides.



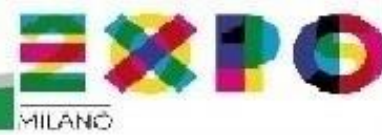
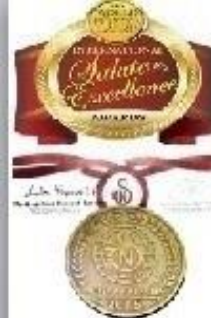
It is the Italian active probiotic published for the first time on International Journal by American Society for Microbiology (2012)

Trial n°		Porpouse	Authors	Institute	Place	Evaluated by
143	Human	Potential probiotic <i>Kluyveromyces marxianus</i> fragilis B0399 modulates the immune response in Caco-2 cells and PBMCs and impacts on the human gut microbiota in an in vitro colonic model system.	Simone Maccaferri, Annett Klinder, P. Brigidi, P. Cavina (COOP Italia), A. Costabile	University of Bologna, University of Reading, UK	Bologna, Italy; Reading, UK;	American Society for Microbiology



AMERICAN SOCIETY FOR MICROBIOLOGY

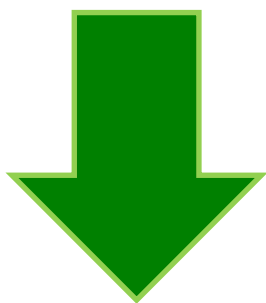
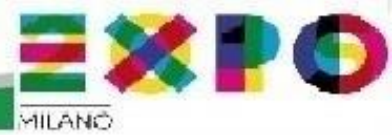
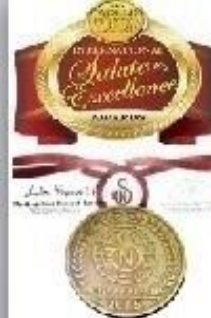
Applied and Environmental Microbiology



Univerity of Bologna and **University of Reading (UK)** say that ***Kluyveromyces B0399*** (TURVAL B0399®) in the dosage of **10 million CFU/day**:

1. It colonizes the intestine: it is **extremely adhesive** to human **enterocytes** of the intestinal epithelium.
1. It regulates the **immune response** by acting on **cytokines** (pro-and anti-inflammatory): in particular in inflammatory state produces a reduction in the production of pro-inflammatory cytokines.
1. It affects the microbial flora of the colon, stimulating the **increase** of the concentration of ***Bifidobacteria***.
1. It provides **energy** and promotes the **growth of epithelial cells** of the colon by the production of short-chain fatty acetate and propionate.
1. It **reduces** the **toxicity** of liquid faecal.

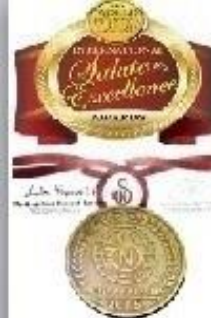




***Kluyveromyces B0399* (TURVAL B0399®)**

demonstrated a number of beneficial and strain specific properties desirable for application as a **probiotic.**

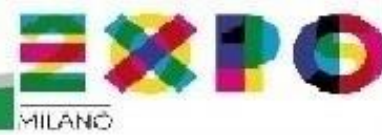
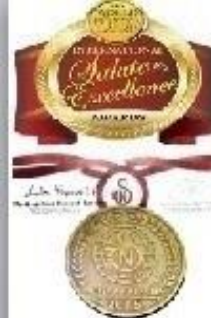




That's why



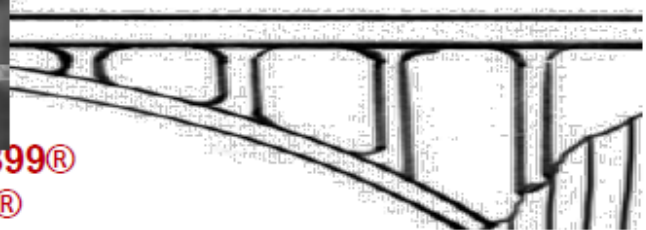
**our active ingredient is the
new generation of probiotics
and breakthrough technology**



PROBIOTIC BACTERIA



PROBIOTIC YEAST



**Kluyveromyces marxianus B0399®
PROBIOTIC LACTC YEAST®**

Saccharomyces Boulardii

- Lactobacillus Acidophilus
- Lactobacillus Rhamnosus GG
- Lactobacillus Helveticus
- Bifidobacterium Infantis
- Bifidobacterium Lactis
- Lactobacillus BulgaAricus
- Lactobacillus Silivarius
- Lactobacillus Plantarum
- Lactobacillus Reuteri
- Lactobacillus Casei
- Bifidobacterum Bifidum
- Streptococcus Thermophilus
- Bifidobacterum Breve
- Bacillus Coagulans
- Lactobacillus Brevis
- Lactobacillus Paracasei
- Bifidobacterium Longum
- Lactobacillus Johnsonii
- Lactobacillus Fermentum
- Pediococcus Acidlacti

**INNOVATIVE PROBIOTIC PROPERTIES,
RECOGNISED BY
ITALIAN MINISTRY OF HEALTH!**



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



University of
Reading
United Kingdom



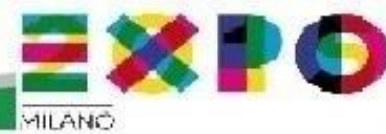
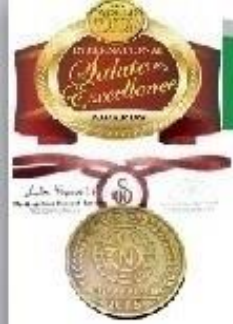
UNIVERSITÀ
di VERONA



UCC

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh





CLINICAL SUPPORTED CLAIMS (part 1):

1. It improves naturally the balance of **gut flora** (approved by Ministry of Health, 2005) (Trial 125, 132, 138,143)
2. It is **NATURAL** and **GUT FRIENDLY** because it fortifies the existing good bacteria (Trial 125, 132, 138,143)
3. **Reaches naturally the intestine alive** surviving harsh stomach acids (Trial 35, 130.4B, 79B, 130.1B, 143)
4. **Efficiently colonizes intestine** (Trial 143)



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University of
Reading
United Kingdom



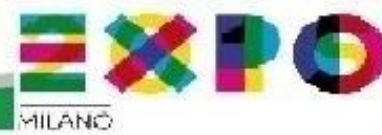
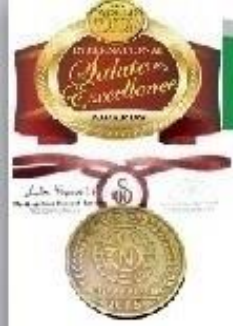
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CLINICAL SUPPORTED CLAIMS (part 2):

High lactase activity (Trial 35)



Efficance against Irritable Bowel Syndrome (IBS) (Trial 16,125, 130, 132, 138)



Fortifies immune system also against atopic dermatitis (Trial 96A-B, 129)



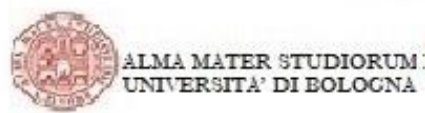
Has **strong antimicotic action** (ex. Candida) and efficiently compete against pathogens (Trial 57, 96A, 129, 143)

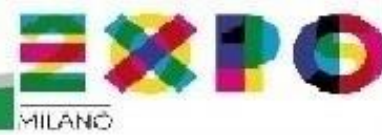


Not compromised by antibiotic use and **prevents the side effects** of antibiotic therapy (Trial 84.01, 84.02)



Reduces and prevents halitosis (Trial 168)





1. *Kluyveromyces B0399*[®] (TURVAL B0399[®]) improves naturally the **balance of gut flora**
2. It is **gut friendly** because fortifies existing good bacteria

● **Friendly:** It efficiently fortifies our already existing “good bacteria” (e.g. endogenous *Bifidobacteria*), considered human body’s first line of defense, allowing it to do a better job.

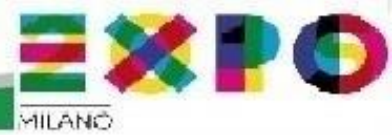
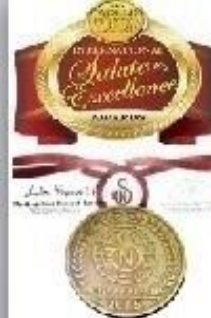
Minimum daily dosage: only 10 million CFU/die

Approved by the Italian Ministry of Health in 2009 conform at guideline about pre/probiotic (Dec. 2005)



● Taken daily , **it promotes the growth of our system’s own unique good bacterial flora**, by lowering our intestinal pH and creating a healthy intestinal environment.





Summary of the comparison between *Kluyveromyces B0399* (TURVAL B0399®) and the other probiotics



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United Kingdom



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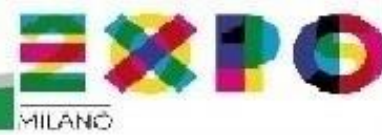
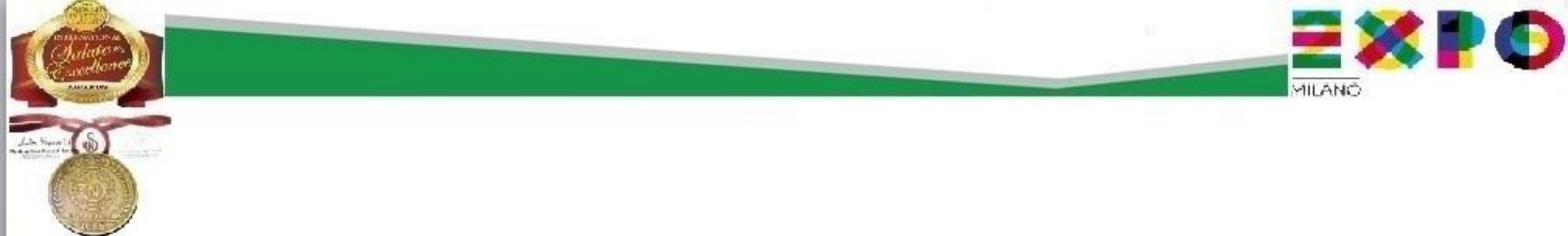


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PROPERTIES AND INDICATIONS	<i>Kluyveromyces B0399</i>	<i>Lactobacillus</i> spp. <i>Bifidobacterium</i> spp.
Cell type	The yeast (Eukaryotic)	Bacteria (Prokaryotic)
Passing gastric barrier alive and active	Chitin based cell wall	Not declared
Production of useful substances for the body	Oligosaccharides, oligopeptides, such as: - β -GALACTOSIDASE (LACTASE). -B -glucans and oligosaccharides: GOS, Enzyme Responsible for breaking down lactose --- FOS, MOS other functional enzymes such as: β -GLUCANASE, INULINASE; enzymes for oligosach. production	Example for <i>Lactobacillus reuteri</i> : REUTERIN (anti---microbic substance of the broad spectrum)
Resistance to infectious agents (Bacteriophages)	HIGH	LOW
Administration for those who are lactose intolerant	SPECIFICALLY INDICATED	ALLOWED
Antibiotic susceptibility	NONE (due to its "yeast" nature)	Susceptible to most commonly used antibiotics
Dioxide (CO ₂) production in the gut	Insignificant level	YES
Production of ATP	HIGH (2 ATP / 1 C ₆ H ₁₂ O ₆)	LOW (1 ATP / 1C ₆ H ₁₂ O ₆)
Digestion of lactose	HIGH (the production of β -GALACTOSIDASE)	HIGH (the production of β -GALACTOSIDASE)
Dosage --- Therapeutic minimum and its effect upon gut flora	LOW ~ "natural"; efficiently colonise intestine even when taken at low dosage such as: 10 million CFU / day	HIGH drastic impact on the natural microflora due to the high dosage suggested (10 billion CFU / day)
Anti---micotic action (anticandidiasis)	SPECIFIC: against -- <i>Candida albicans</i>	GENERAL



Summary of the comparison between *Kluyveromyces B0399* (TURVAL B0399®) and *S. boulardii*.



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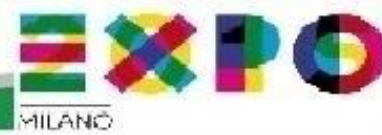
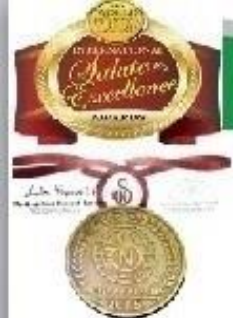
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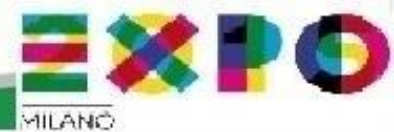


Comparison of the **properties and indications** of *Kluyveromyces B0399* and *Saccharomyces boulardii*

PROPERTIES AND INDICATIONS	<i>Kluyveromyces B0399</i> [®]	<i>Saccharomyces boulardii</i>
β---galactosidase activity	Yes +++	NO
Ability to produce lactic acid and positively reduce the intestinal pH	Yes +++	NO
Side effects	NOT DETECTED	YES (not recommended for fragile patients) *
Increase the number of good bacteria of the gut natural flora (bifidobacteria)	Demonstrated	NO
Dosage--- Therapeutic minimum and its effect upon gut flora	LOW ~ "natural" 10 million CFU /day	HIGH ---10 billion CFU/day drastic impact on the natural microflora
Is it frequently encountered in every---day food	YES (is in many cheeses and naturally fermented kefir)	NO (comes from lichens)
Anti-micotic action (anti-candidiasis)	SPECIFIC: Against --- <i>Candida albicans</i> proposed mechanism: contact inhibition	SPECIFIC: Against <i>Candida albicans</i> ; by antimycotic effect of capric acid

*pag. 24 of EFSA QPS2013 update – EFSA Journal





Functional Foods



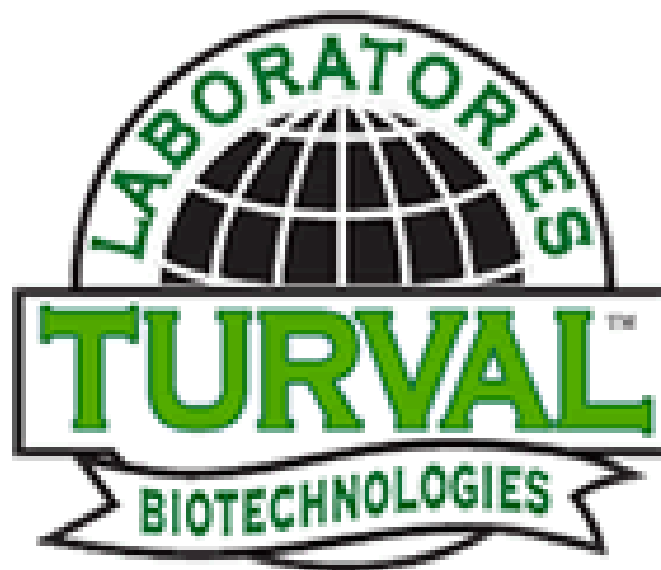
KLUYBREAD®



Human health



Animal health



Horse, pet and exotic

ZOOTECHNICAL NUTRITION MARKET

In the field of animals raised for food production, such as **cattle, swine** and **piglets**.



Specific formulations for: **Horses, Pets, Poultry, Ostriches, Pigeons, Camelids** and **others**.

HUMAN HEALTH MARKET

NUMEROUS PROBIOTIC BRANDS BASED ON TURVAL B0399®
DIFFERENT FORMULAS SUCCESSFULLY COLONISE WORLD MARKET

ITALIA



CAPSULES & DROPS
PAEDIATRICS & ADULTS

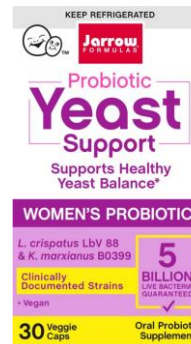
POWDER BAGS:
K.MARXIANUS, VITAMINS,
MINERALS, ENERGIZERS
ADULTS ONLY



CAPSULES PAEDIATRICS &
ADULTS

CAPSULES
PAEDIATRICS & ADULTS

Integratore Alimentare
a base di Lievito
Lattico Probiotico®



KEEP REFRIGERATED
Jarrou
FORMULAS
Probiotic
Yeast Support
Supports Healthy
Yeast Balance®
WOMEN'S PROBIOTIC
L. crispatus LbV 88
& K. marxianus B0399
Clinically
Documented Strains
Vegan
30 Veggie
Caps
5
BILLION
LIVE BACTERIA
GUARANTEED
Oral Probiotic
Supplement



INDIVIDUALLY WRAPPED SOFT
CHEWS/CARAMELS
PAEDIATRICS & ADULTS

CANADA



CAPSULES
PAEDIATRICS & ADULTS



CAPSULES
PAEDIATRICS & ADULTS



DUAL
GIT KIT:
CAPSULES - LIOPHILIZED PAPAYA
CAPSULES - K.MARXIANUS B0399
PAEDIATRICS & ADULTS



CANDIDIASIS KIT:
CAPSULES - INTESTINAL FLORA BALANCE
OVULES - VAGINAL FLORA BALANCE
ADULTS



PROBIOTIC CHOCOLATE PRODUCTS
PAEDIATRICS & ADULTS

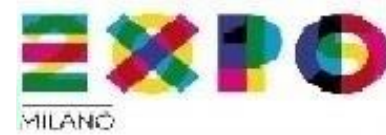
REP. CECA



SLOVENIAN



FUNCTIONAL FOOD MARKET



Sampion kvaliteta u grupi proizvoda
Jogofir
Mlekara "Dana"
Vrbsa, Srbija



KB0399® makes the **dough easily workable** and confers **pleasant flavour** to the final product (paraprobiotic and prebiotic effect).



PASTAE MATER (also for gluten free)
- sourdough in powder form containing B0399

COMING SOON ...

Kluyveromyces B0399® in **CHOCOLATE**



Chocolate cream



Dragée of
chocolate cereals



Kluyveromyces B0399® in the **FILLING**

Kluyveromyces B0399® on the
surface of **FROZEN BREAD**



Kluyveromyces B0399®
in **THE CAP**
Functional beverage
(power drinks, fruit
juice)

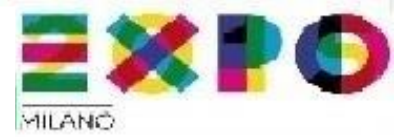


Sugar with *Kluyveromyces* B0399®

and on **FROZEN PIZZA**



EXAMPLES OF OTHER APPLICATIONS...



Mozzarella cheese



Stracchino cheese



Biscuits



Olive oil



Cereal bars



Beverage



Cereals for breakfast



Ice cream



and more...

INDUSTRIAL APPLICATIONS OF PROBIOTIC LACTIC YEAST®,
Kluyveromyces marxianus B03356 (turval b03356)

IN HUMAN HEALTH & NUTRITION

FOOD SUPPLEMENTS (PHARMACEUTICALS)		CAPSULES	BioVAL, BioVAL-Complex, Ovocan, Eufgr, BioSympa, BioVi, Yiazorb, Lievilactis, Lactifast.	blister or jar
		POWDER BAGS	BioVAL, BioVAL complex, Sinerga.	
		LIQUID DROPS	BioVAL, Lievilactis	
FUNCTIONAL FOOD & BEVERAGES	CONFECTIONERY: INDUSTRY	CHOCOLATE	Probiocic	milk and dark chocolate bars
		SOFT CHEWS	BioVi	
		CHEWING GUM	(in progress)	
	DAIRY INDUSTRY	FERMENTED MILK PRODUCTS KEFIR-TYPE	Eufgr, Jogofir (in progress)	
		CREAM CHEESE	(in progress)	
BEVERAGES WITH 2.0 CAP TECHNOLOGY	POWER DRINKS	(in progress)	probiotic + other active principles in cap + mineral water in bottle	
	FRESH FLAVORED MILK	(in progress)	probiotic + flavors in cap + pasteurized milk in bottle	
MEDICAL DEVICES		OVULES	Ovocan	

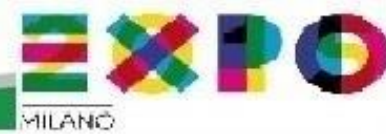
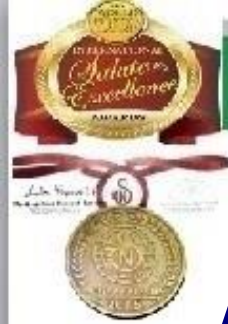
IN ZOOTECHNICAL NUTRITION

FEED COMPLEMENT		POWDER (JARS)	Turval 6 Horse Daily, Turval 12 Horse Sport, Turval 3 Camels, Turval 5 Camelids	lactic yeast + other ingredients (specific formulation for the target animal)
		POWDER (SACKS)	Turval 0sp/5	Lactic yeast used for pre- ferment the milk that is added to the food given to buffaloes
FEED MATERIAL		POWDER (SACKS)	Turval 0sp/5, Turval 0sp/50, Turval 0sp/500	lactic yeast at different degrees of probiotic activity (enter in different % in the final formulation produced by the distributor for the livestock: pig/piglet-cow/dairy cow-horse-sheep-goat-broiler-hen)

BAKERY INDUSTRY

FOOD NATURAL		BREAD, SAVORY SNACKS, PIZZA, BREADSTICKS	KluyBread (in progress)	Bread and breadsticks, snacks (sweet and savory) and pizza with lactic yeast, ancient taste of homemade bread
FUNCTIONAL FOOD		HEALTHY SAVORY SNACKS	KluyBread (in progress)	snacks (sweet and savory) with probiotic lactic yeast
FOOD QUALITY		ANTI MOLD effect for BREAD, SAVORY SNACKS, PIZZA,	in progress	Bread and breadsticks, snacks (sweet and savory) and pizza with Probiotic Lactic Yeast

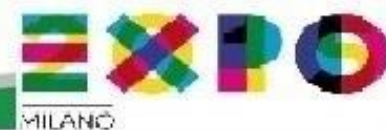
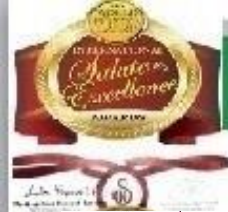




Kluyveromyces B0399[®] (TURVAL B0399[®]) **is a probiotic of new generation**

It helps to assure a considerable improvement in
the health and well-being in humans





Just out of curiosity. . .



BEFORE



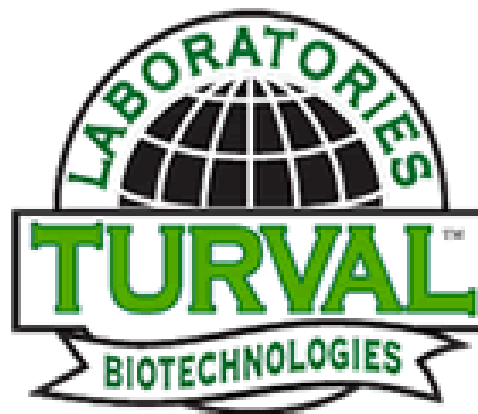
AFTER two months of treatment with TURVAL 3 camel daily

(Gil Riegler Oasis Camel Dairy- Ramona, California USA.)

In collaboration with the Nairobi University (Kenya) and the Ohio State University



Thank you for your kind attention



Turval Laboratories, Ltd (Laboratori Turval Italia, Srl)
Friuli Innovazione (of AREA Science Park – TS – National center)
via J.Linussio, 51; 33100 Udine, Italy
tel.+39 (0432)629731 - 1637213

E-mail: info@turval.com
Web site: www.turval.com
Skype: Laboratori Turval Italia Srl