

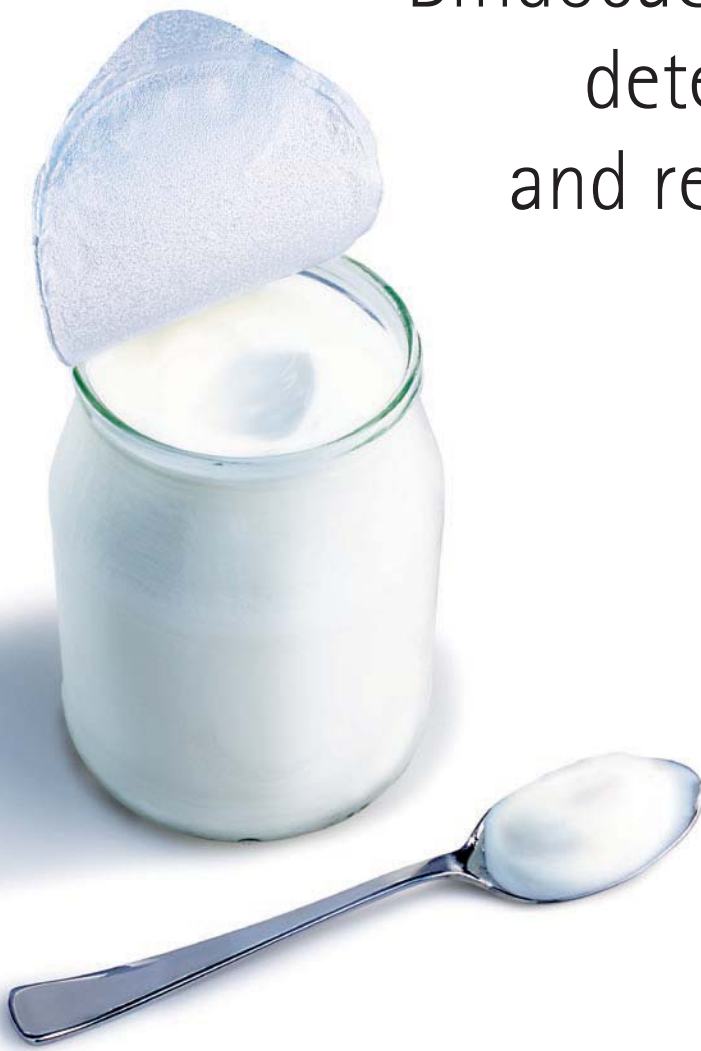


Do you have  
the right balance?

TOS-MUP Medium for the enumeration  
of Bifidobacteria in milk products



# Bifidobacteria – detect it in an easy and reliable way



## Partners for a better life

They are the first and last and are with you throughout your whole life. **Bifidobacteria**, also called probiotics – a natural part of the bacterial flora in the human body. But not only there, **Bifidobacteria** as well as other beneficial bacteria can also be found in fermented dairy foods, especially yogurt. Eating or drinking products rich in probiotics is a sort of home remedy for a lot of infections because it promotes the growth of these bacteria opposed to others.

They are partners and promote good digestion and boost the immune system. One member, **Bifidobacteria infantis** has been proven to dramatically reduce irritable bowel syndrome (IBS).

# Simply knowing what's inside!

## Benefits of Merck's TOS-MUP Medium

- Unique** Best growth performance of Bifidobacteria due to included Galactooligosaccharide (TOS-S)
- Selective** Superior suppression of lactic acid bacteria found in milk products due to Lithium-Mupirocin. Growth of Bifidobacteria is not influenced.
- Reliable** Reliable enumeration of Bifidobacteria in milk and milk products even in presence of high titer of accompanying flora.



# TOS Propionate Agar



Ord. No. 1.00043.0500 (500 g)

A medium for enumeration of Bifidobacteria in milk products.

The composition of the medium complies with ISO Standard 29981 / IDF 220: 2010.

## Mode of action

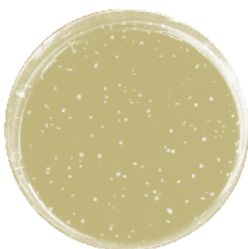
Bifidobacteria are gram-positive, non-spore forming anaerobic rods. The combination of peptone from casein and yeast extract gives a rich nutrient base for excellent growth. Galacto-oligosaccharide TOS is a specific growth factor for all Bifidobacteria whereas other lactic acid bacteria cannot utilize this saccharide. The addition of magnesium sulphate additionally supports growth of injured Bifidobacteria. Ammonium sulphate serves as nitrogen source, potassium dihydrogen phosphate and di-potassium hydrogen phosphate buffer the medium in the neutral pH zone. L-Cysteine serves as reducing agent to give necessary anaerobic condition in the media.

In combination with sodium propionate, which largely inhibits the accompanying flora, TOS Propionate Agar is already very selective and specifically supports the growth of Bifidobacteria. Lithium-Mupirocin inhibits growth of Lactobacilli, Lactococci, Streptococci and Leuconostocs, whereas Bifidobacteria grow unhindered. The typical accompanying flora of milk products is specifically inhibited. In combination with TOS Propionate Agar Mupirocin is so selective that in most cases only Bifidobacteria grow with visible colonies.

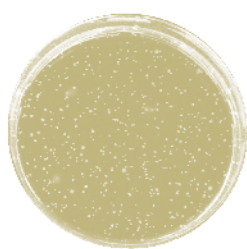
## Typical Composition (g/L)

Peptone from Casein 10.0; yeast extract 1.0;  $\text{KH}_2\text{PO}_4$  3.0;  $\text{K}_2\text{HPO}_4$  4.8;  $(\text{NH}_4)_2\text{SO}_4$  3.0;  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$  0.2; L-cysteine HCl  $\text{H}_2\text{O}$  0.5; Sodium propionate 15.0; Galactooligosaccharide TOS 10.0; Agar-Agar 15.0.

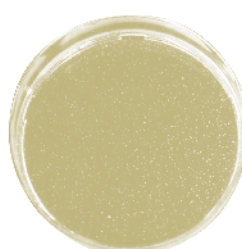
Superior inhibition of Lactobacilli due to Lithium-Mupirocin.  
Bifidobacteria will not be overgrown.



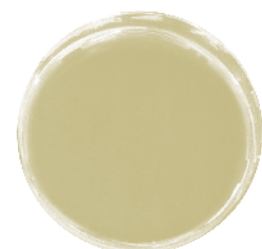
*Bifidobacterium infantis*  
ATCC 25962  
on Clostridial Agar (RCM)



*Bifidobacterium infantis*  
ATCC 25962  
on TOS-MUP Medium



*Lactobacillus delbrueckii* ssp.  
*bulgaricus* ATCC 11842  
on RCM



*Lactobacillus delbrueckii* ssp.  
*bulgaricus* ATCC 11842  
on TOS-MUP Medium

## Quality Control

Test strain	Inoculum CFU/ Petri dish	Recovery	Colony colour
<i>Bifidobacterium animalis</i> subspecies <i>lactis</i> ATCC 27536	50 – 150	> 70 %	white
<i>Bifidobacterium breve</i> ATCC 15700	50 – 150	> 70 %	white
<i>Bifidobacterium longum</i> ATCC 15707	50 – 150	> 70 %	white
<i>Lactobacillus delbrueckii</i> subspecies <i>bulgaricus</i> ATCC 11842	$10^6 - 10^7$	no growth	n. a.
<i>Lactobacillus casei</i> ATCC 393	$10^6 - 10^7$	no growth	n. a.
<i>Streptococcus thermophilus</i> DSM 20259	$10^6 - 10^7$	no growth	n. a.

## Ordering Information

Product	Ord. No.	Pack size
TOS Propionate Agar Base	1.00043.0100	100 g
TOS Propionate Agar Base	1.00043.0500	500 g
MUP Selective Supplement	1.00045.0010	1 x 10 vials
Anaerobic Jar	1.16387.0001	1 PC
Anaerocult® A	1.13829.0001	1 x 10 sachets
Anaerotest®	1.15112.0001	1 x 50 strips
RINGER's tablets	1.15525.0001	100 tablets

Detailed information about preparation, storage and / or experimental procedure and evaluation can be found in the technical data sheet on the internet: [www.merck4food.com](http://www.merck4food.com)

# Enumeration of Bifidobacteria in milk products

ISO 29981 / IDF 220 Protocol

## Dried milk products

Suspend 10 g sample in 90 g diluent  
(1/4 strengths Ringer solution)  
at 45 °C (see details in ISO 29981)

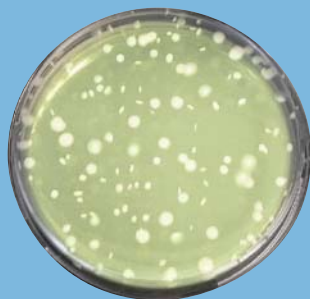
## Yogurt products

Suspend 10 g sample in 90 g diluent  
(1/4 strengths Ringer solution)  
at 20 °C (see details in ISO 29981)

Decimal dilution steps  
(1/4 strengths Ringer solution)

Mix 1 ml of appropriate dilution  
with 15 ml of TOS-MUP Medium  
Incubation at 37 °C for 72 h ± 3 h

Bifidobacteria  
on TOS-MUP Medium  
Count all white colonies with  
acetic acid odour



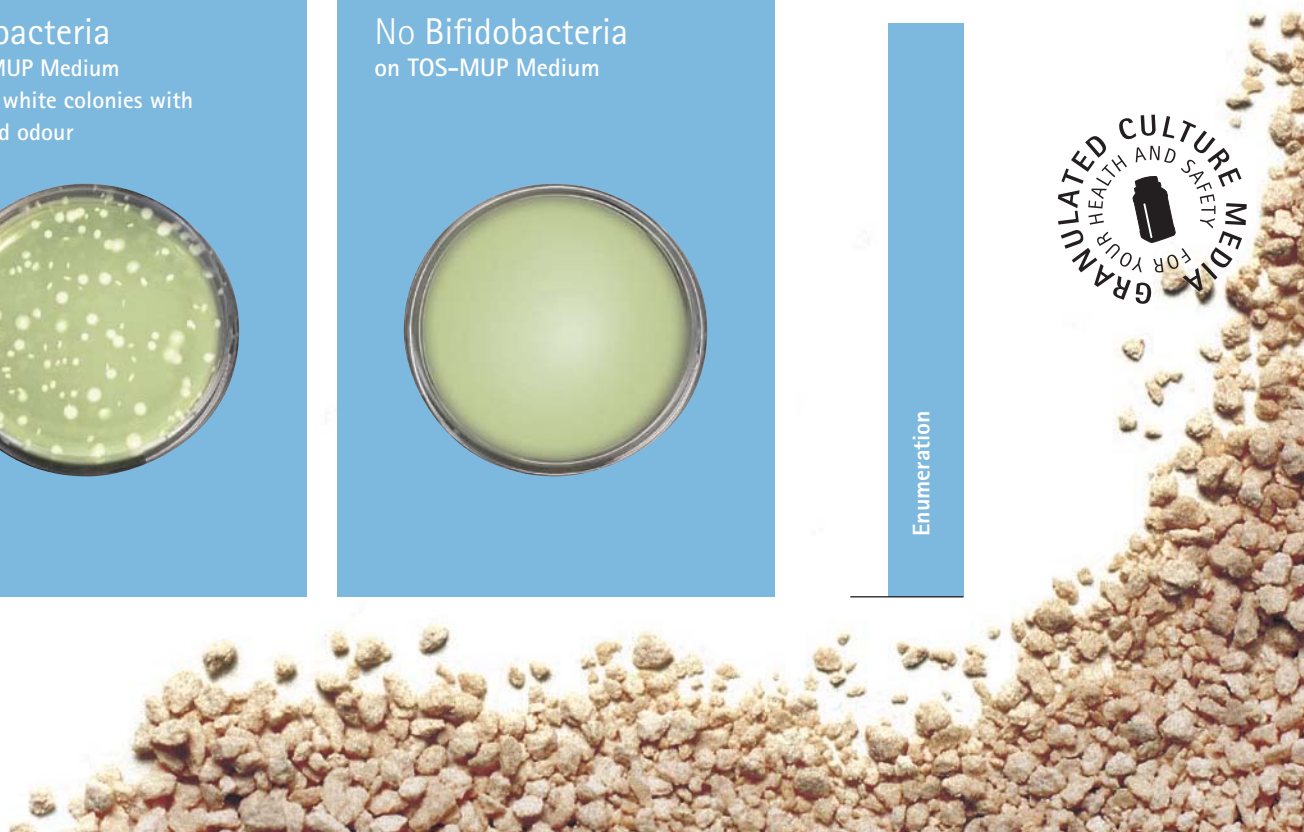
No Bifidobacteria  
on TOS-MUP Medium



Preparation

Detection

Enumeration



Merck KGaA  
64271 Darmstadt, Germany  
Fax: +49 (0) 61 51 / 72-60 80  
E-mail: [mibio@merck.de](mailto:mibio@merck.de)  
[microbiology.merck.de](http://microbiology.merck.de)  
[www.merck-chemicals.com](http://www.merck-chemicals.com)

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

W 286185 02/10, 1st issue

