Understanding Enterosorbents

Using Intestinal Adsorbents for Improved Clinical Outcomes

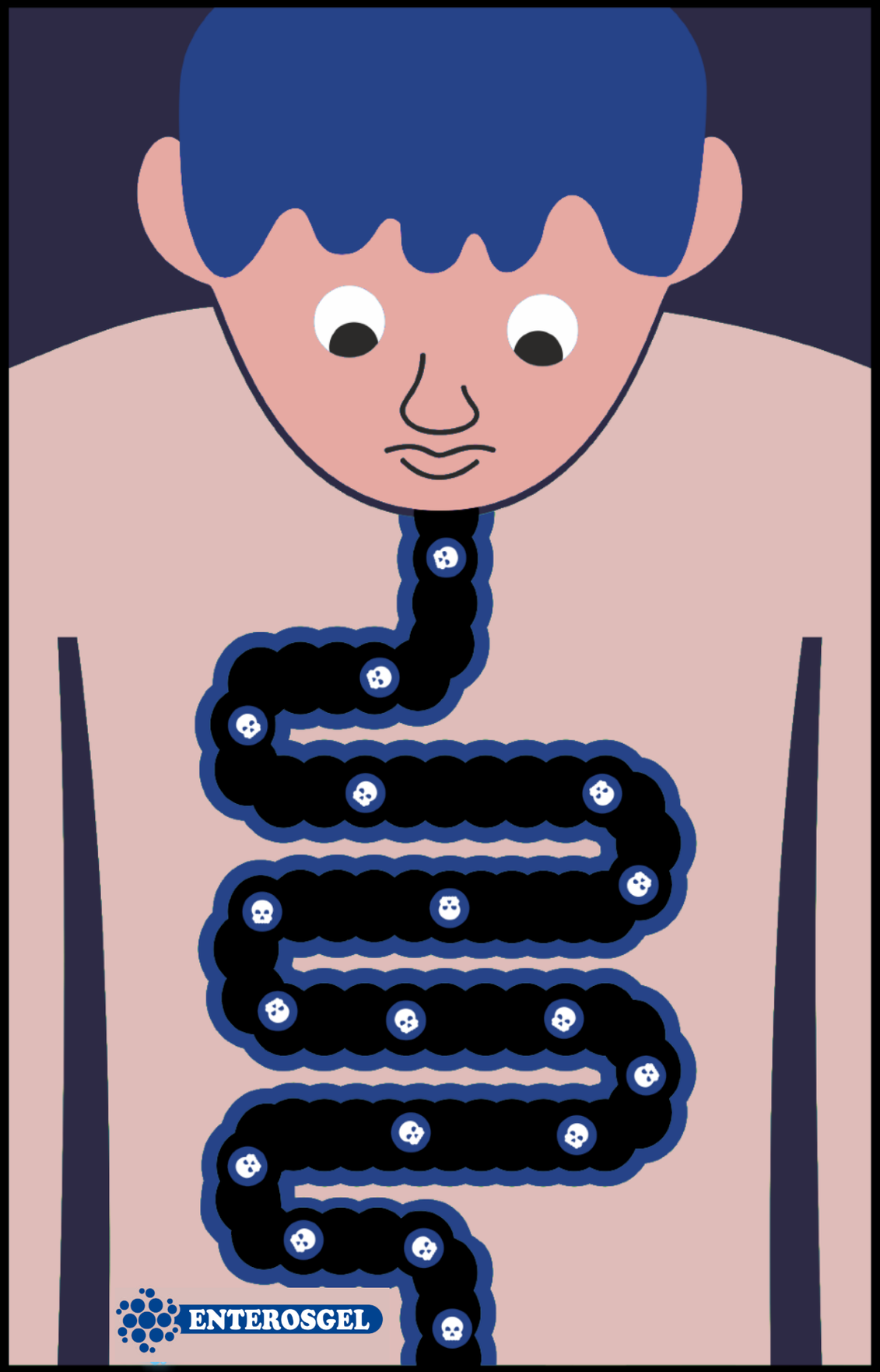
New Zealand, 2018

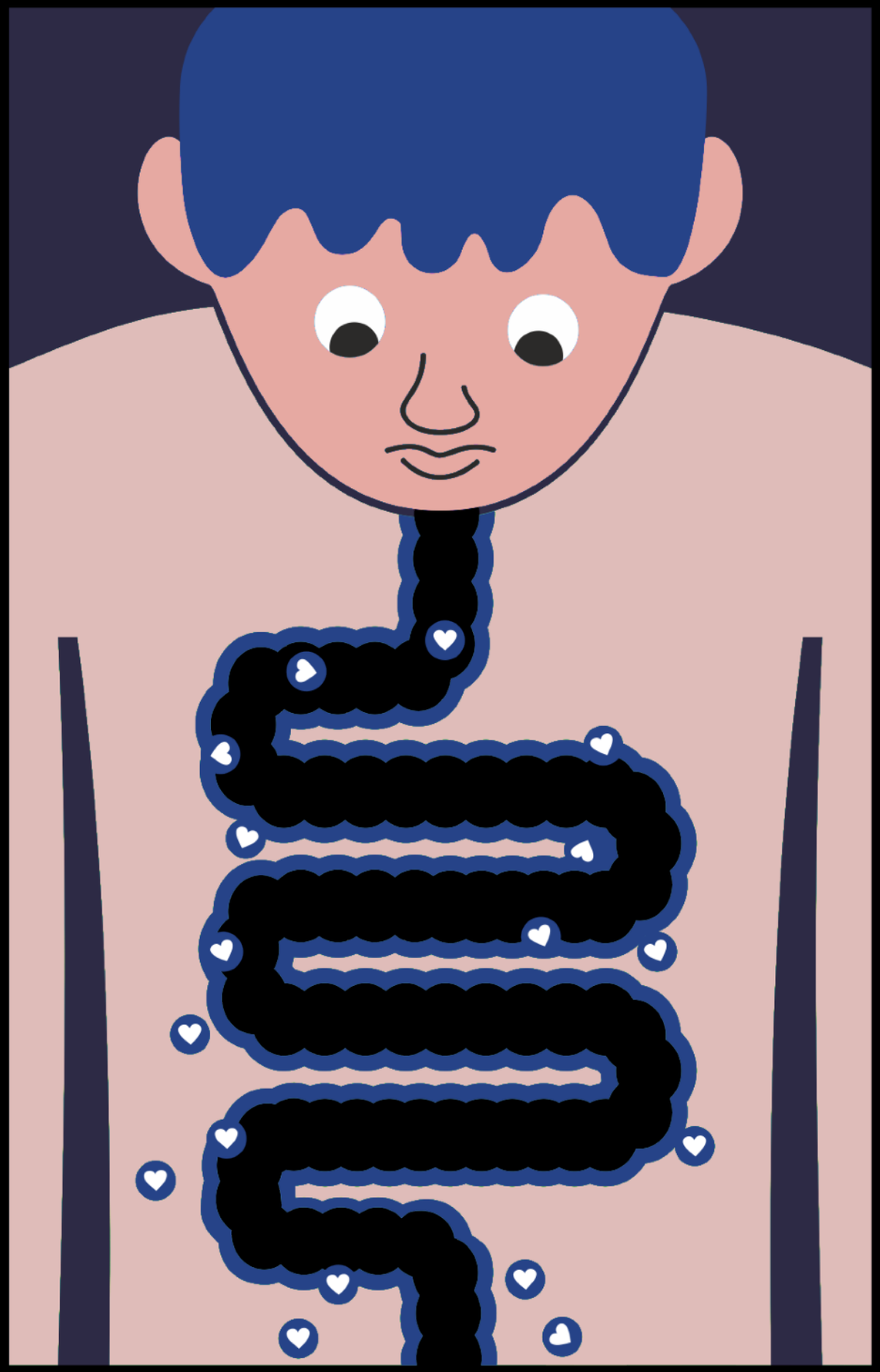
Presented by
Dr Susan Walker
BSc MChiro

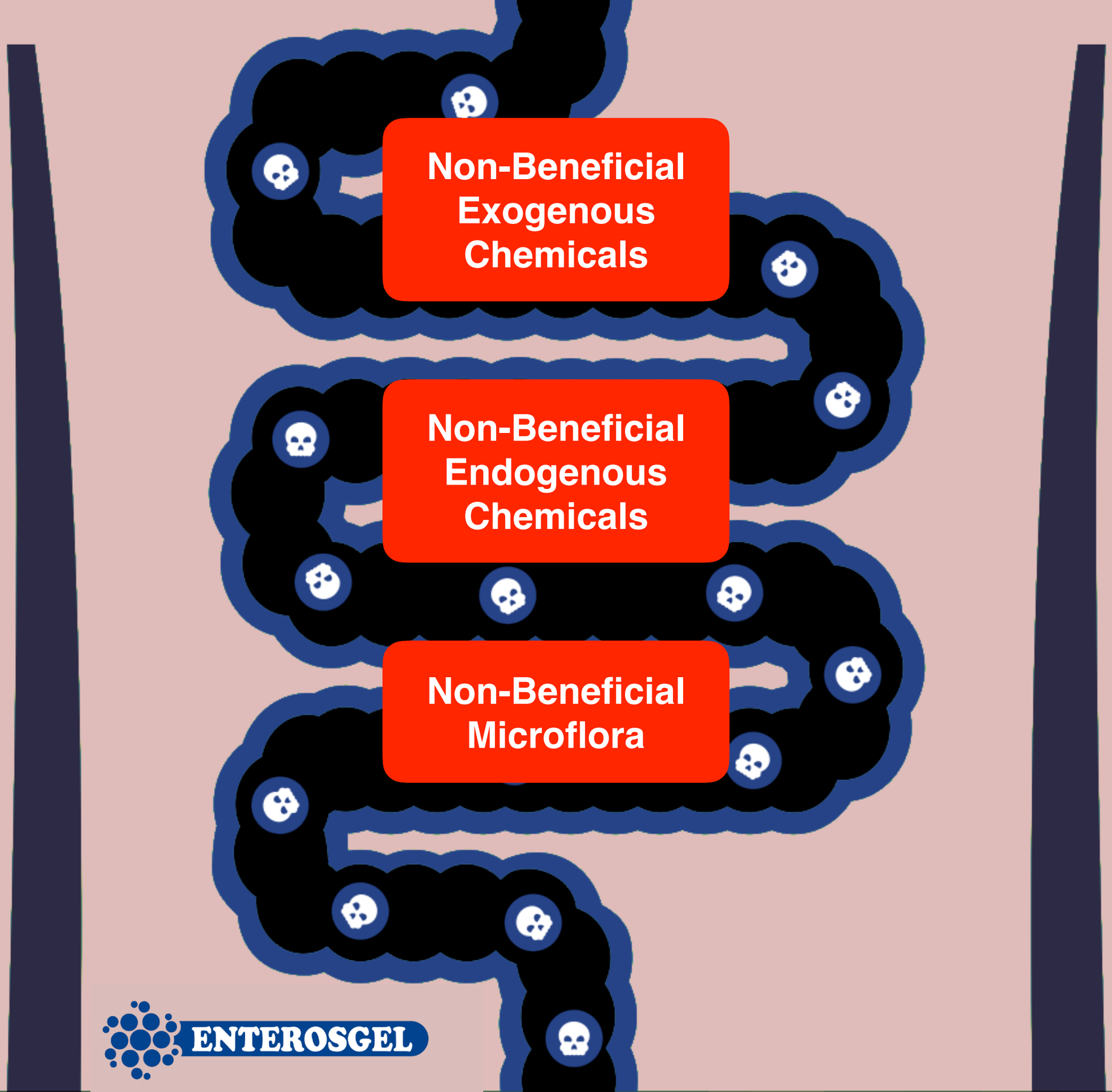
This product has fascinated me and opened my eyes to how else I could assist people's health.

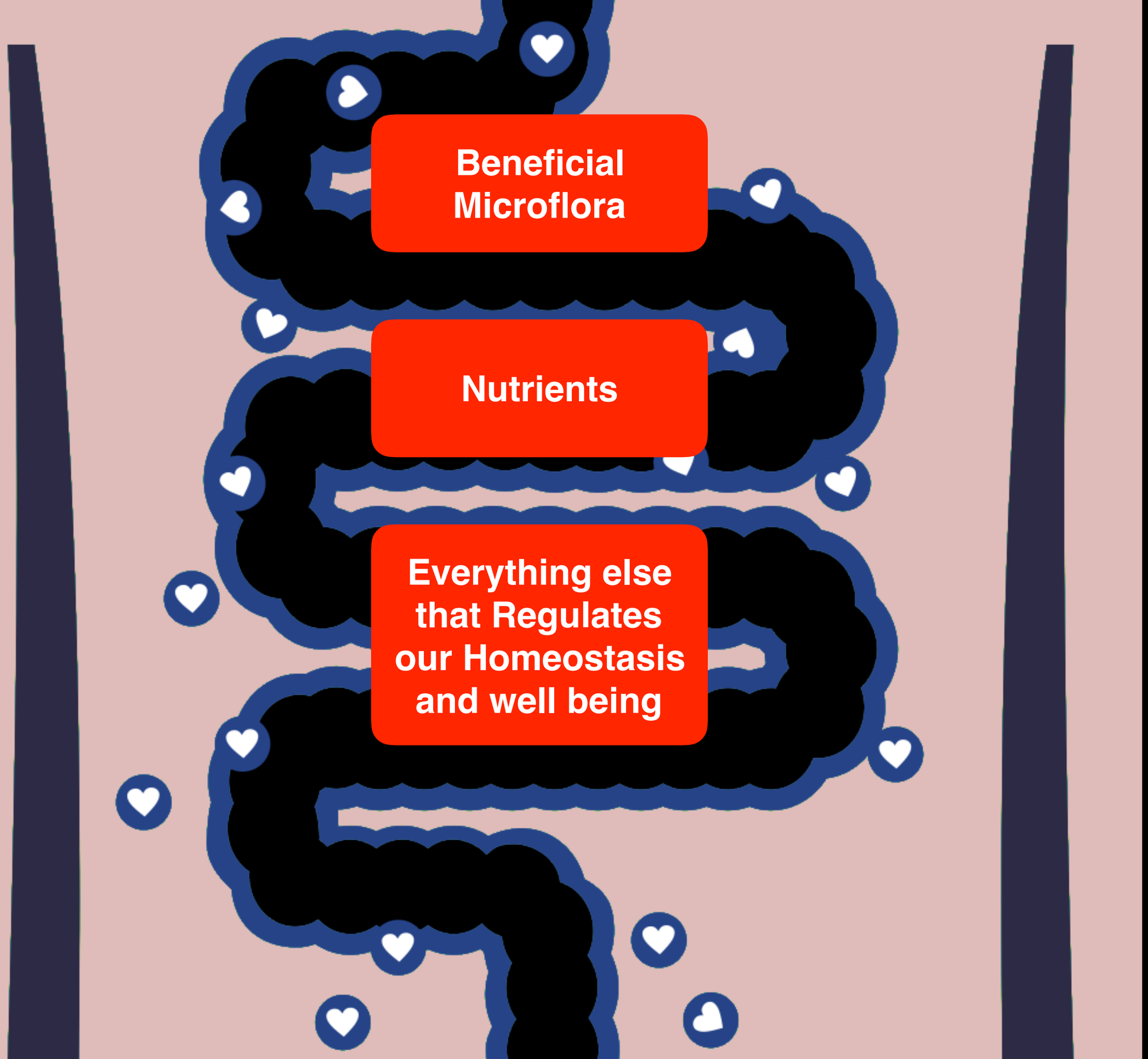
Dr Susan Walker - Chiropractor

Exclusive Wholesale Distributor for Enterosgel Australia


ENTEROSGEL

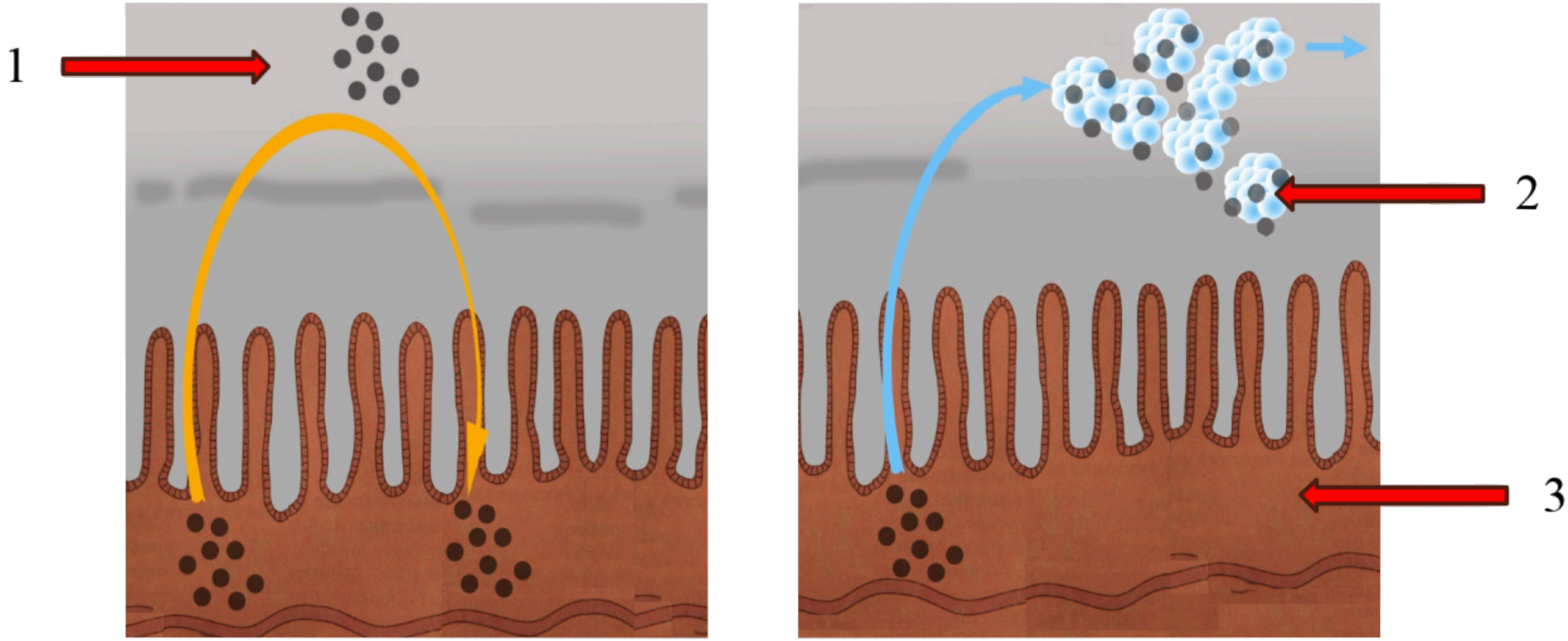



Non-Beneficial Exogenous Chemicals
Non-Beneficial Endogenous Chemicals
Non-Beneficial Microflora
ENTEROSGEL


Beneficial Microflora
Nutrients
Everything else that Regulates our Homeostasis and well being

“Medicine is
adding where something is missing,
and
removing where there is too much"

Hippocrates



1. Waste products being eliminated into gut lumen
2. Enterosorbents irreversibly binds waste products
3. Intestinal mucosal lining

Enterosorbents reduce freely available waste products from being absorbed through the bowel into the body

History of Enterosorbents

The use of intestinal absorbents dates back to ancient times.

Traditionally absorbent compounds such as charcoal, clay, burned horn and pounded tuff were swallowed to absorb toxins or poisons in the gut.

While these were useful for acute poisonings these sorbents did not come without risks to the consumers health.

History of Enterosorbents

Med J Aust. 1978 Mar 25;1 Suppl 1:1-3.

Clay eating by Aboriginals of the Northern Territory.

Bateson EM, Lebroy T.

Abstract

Eleven Aboriginal patients from the Northern Territory, in whom radiological examination of the abdomen demonstrated opaque masses of clay in the colon are described. This was due to the eating of white clay which is found only in streams, springs and billabongs of the coastal areas of the Territory. The habit does not appear to be a perversion of appetite, nor is it related to anaemia or pregnancy. The clay is eaten mainly for medicinal purposes or to allay hunger. The results are not always beneficial, since clay caused complications (including obstruction and perforation of the colon) in five of our 11 patients.

PMID: 661724

[Indexed for MEDLINE]

History of Enterosorbents

Enterosorbents you may already know about:

- **Microcellulose**
- **Activated Charcoal**
- **Kaolin**
- **Mineral Clay (Attapulgite, Smectite)**
- **Natural organic on the basis of dietary fibres eg. pectin, chitin, hydrolysed lignin, alginates**
- **Zeolite**
- **Carbon based sorbents**
- **Silicon based sorbents**
- **Composites made up from more than one of these.**

Herbst-Volkheimer

First described by Dr Gustav Herbst in 1844, whereby persorption of fine dusty powders (sometimes of non-digestible matter) occurs to work their way between cells lining the gut wall and enter the blood, tissues, lymphatics, bile, alveolar lumen, urine, peritoneal cavity, breastmilk, foetal blood circulation and CSF.

Volkheimer G. The Phenomenon of Persorption: Persorption, Dissemination and Elimination of Microparticles. Herborn Litterae, Herborn-Dill, Germany: 7-17 (2001).

Herbst-Volkheimer

a. E.F. Gustav HERBST (1803-1893), Göttingen, finds starch-granules in the chyle and blood three hours after administering starch flour to a dog (1844).
b. Franz Cornelis DONDERS (1818-1889), Utrecht, and his post-graduate student MENSONIDES find charcoal particles and starch-granules fed to frogs and rabbits in the mesenteric blood (1846, 1851)
c. Rudolf KOELLIKER (1817-1905) and Rudolf VIRCHOW (1821-1902) in Würzburg 1850. Koelliker's post-graduate student EBERHARD demonstrates charcoal particles fed to rabbits in the chyle and blood. He finds sulphur crystals fed to dogs in the chyle (1847, 1851). VIRCHOW believes that this is due to a mechanical perforation of epithelial layer (1852, 1854).
d. Jakob MOLESCHOTT (1822-1893), Heidelberg and his assistant MARFELS find pigments and sheep cells fed to frogs in the blood of the frogs (1854)
e. Rahel HIRSCH (1870-1953), Berlin finds occasional starch-granules after the ingestion of starch flour in the urine and blood of dogs and, for the first time, also in man (1906). When she reports these results in the "Society of the Charité Physicians", she is greeted with laughter.
f. Fritz VERZÁR (1886-1979), Budapest confirms the results of Rahel HIRSCH on mammals and man (1911). At the Institute for Experimental Gerontology in Basle, he subsequently concerns himself with the cell disintegration of the intestinal epithelium. In 1969, he discusses with VOLKHEIMER the influence of motor factors ("villous pump") on the persorption mechanism in the small intestine.
g. Theodor BRUGSCH (1878-1962), Berlin, Director of the 1st Medical University Clinic of the Charité, formerly the co-assistant of Rahel HIRSCH, recalls in 1956 her studies on the demonstration of starch-granules in urine.
h. Friedrich Horst SCHULZ (1915-1982), Berlin, the successor of Brugsch, generously encourages the studies of the persorption of microparticles taken up again by VOLKHEIMER in 1959 in the Laboratories for Experimental Gastroenterology at his clinic.

Volkheimer G. The Phenomenon of Persorption: Persorption, Dissemination and Elimination of Microparticles. Herborn Litterae, Herborn-Dill, Germany: 7-17 (2001).

Herbst-Volkheimer

In Europe there has been a sway from solid powder and tablets sorbents to liquid and gel forms due to the knowledge of this effect and it's association with mineral based sorbent powders.

Volkheimer G. The Phenomenon of Persorption: Persorption, Dissemination and Elimination of Microparticles. Herborn Litterae, Herborn-Dill, Germany: 7-17 (2001).

- Studies have demonstrated increased sorption ability in gel based enterosorbents.
- Enterosorbents that are in powder form have air filling the pores in the molecular compound.
- These air bubbles need to be displaced before sorption can occur. This can hinder sorption capacity.

Effectiveness of Enterosorbents

Depends on:

- **Their active surface area**
- **Adsorption capacity**
- **Selectivity with respect to the substance being absorbed**
- **Also on a number of other parameters**

New Generation Enterosorbents

After many phases of evolution of sorbents, the creation of a new generation sorbent was commissioned by the Russian Defence Force.

They called on the soviet scientists to create a product to help protect their soldiers from chemical warfare, biological warfare and nuclear warfare.

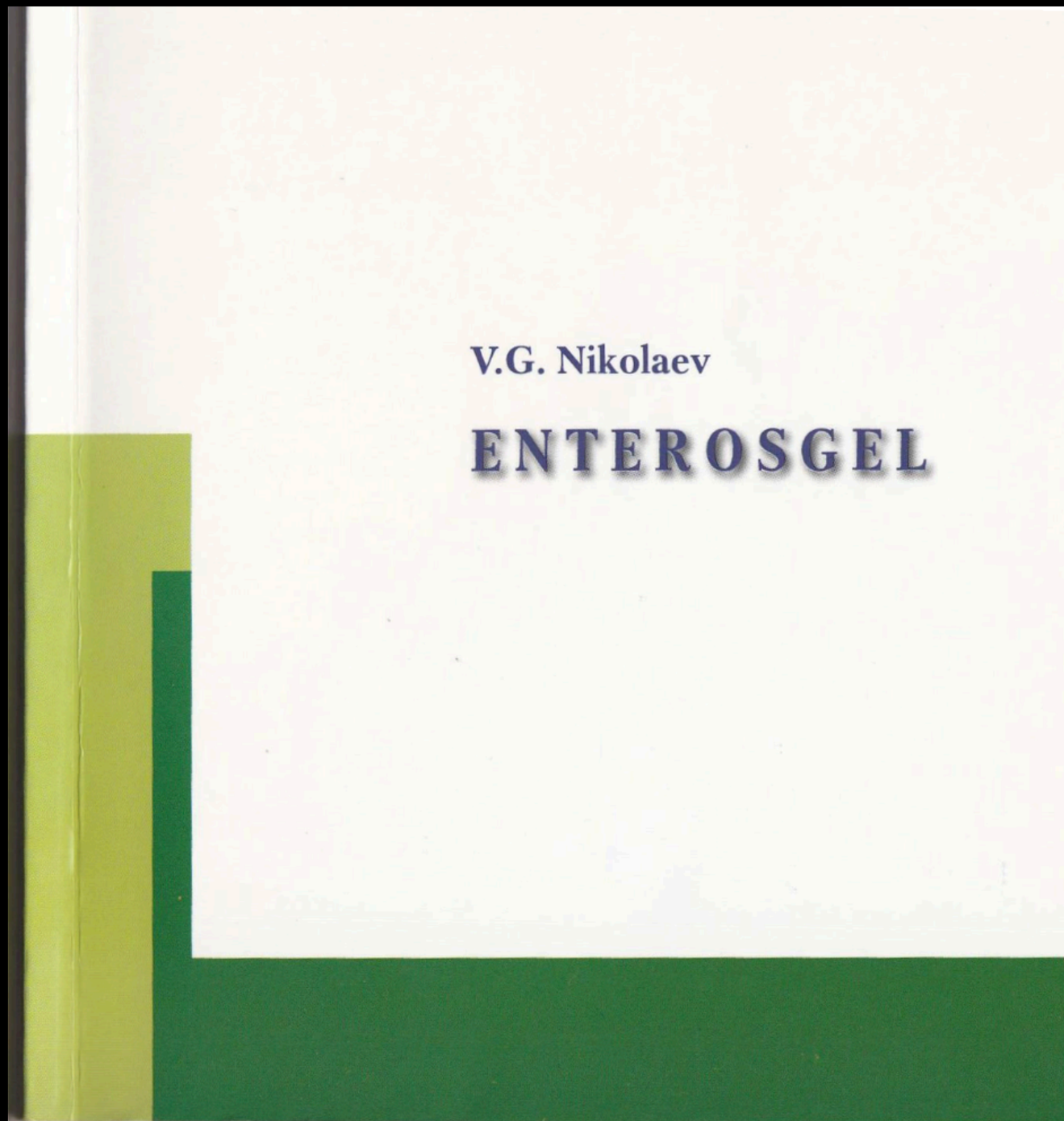
New Generation Enterosorbents

Since all available products did not meet the convincing efficacy and safety requirements, it was decided to synthesize completely new molecule - innovative intestinal adsorbent Enterosgel.

After 3 years, Vladimir Nikolayev MD, Professor, in Kiev had made an entirely new silica based molecule called Polymethylsiloxane Polyhydrate (PMSPH).

New Generation Enterosorbents

Vladimir Nikolayev, MD, professor, laureate of the State Prize of the USSR in 1979, one of the founders of the method



Innovative & Clean Formula

<u>Free from</u>

- **Taste & Flavours**
- **Sugar & Sweeteners**
- **Gluten**
- **Dairy**
- **Animal Products**
- **Fat**
- **Additives & Preservatives**
- **Odours**
- **Aluminium**

- Enterosgel is a suspension gel and the pores are already filled with water, assisting the electrostatic migration of particles into its pore structure to be irreversibly bound and captured.

What is Enterosgel for?

Drug-free Enterosgel® is a tasteless absorbent (binder) gel that offers gentle relief from gut discomfort and diarrhoea.

Imagine swallowing a spoonful of micro-sponges that travel through your stomach and gut lumen soaking up intestinal illness symptoms and carrying them through your bottom end and out of your body - the natural way. The gel acts only in the gut lumen and 100% of each dose is excreted with the stool within 12 hours.

Enterosgel® can be recommended as part of any gut health care plan to be taken 2 hours away from medications, antibiotics, supplements, herbals and remedies.


ENTEROSGEL®
225 g

“Enterosgel is an Intestinal Absorbent (enterosorbent) intended to be used as an adjuvant to standard rehydration therapy and in the management and reduction of stomach and intestinal illness symptoms.”

In other words:

Mix Enterosgel with fluid to aid in alleviating and managing

- Diarrhoea
- Indigestion
- Reflux
- Vomiting
- Traveller's Diarrhoea
- Gas
- Food Sensitivities
- Stomach Cramps
- Abdominal Pain

УДК 616.9:579.842.14:615.33
DOI 10.11603/1681-2727.2017.1.7768

O.M. Chemych, L.V. Moroz

EFFECT OF PROBIOTICS ON THE PARAMETERS OF ENDOGENOUS INTOXICATION, IMMUNOREACTIVITY AND INTESTINAL MICROBIOCENOSIS PATIENTS WITH SALMONELLOSIS

Sumy State University, M. Pyrohov Vinnytsia National Medical University

In all patients the microbiocenosis of large bowel has been investigated prior to treatment and on (5.76±0.16) days from the moment of hospitalization. At admission to hospital to all patients appoint basic therapy: gastric lavage or intestinal canal, nutritional care, oral (rehydron) or parenteral rehydration (Trisolum, Ringer's solution, 5.0 % glucose solution, 0.9 % saline solution), enzymes (Pancreatine, Mezym), enterosorbents (Atoxyl, Enterosgel).

UDC 616.34-002-008.87-08-039.76(477.85)

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Sydorchuk A.S.,
Bogachik N.A.,
Venglovska Ya.V.,
Kazakov S.G.,
Kostina N.V.

Department of Infectious Diseases and Epidemiology of the Higher State Educational Institution of Ukraine "Bukovinian State Medical University", Chernivtsi, Ukraine

EXPERIENCE OF OPTIMIZING TREATMENT OF ACUTE INTESTINAL DISEASES IN BUKOVYNA

All patients received basic therapy, detoxification, rehydration with parenteral ("Trysil" rheosorbilact) and oral ("rehydron") the introduction of salt solutions, "Nifuroxazide" chelators ("Enterosgel"), enzymes (replacement therapy) and 11 patients were additionally administered probiotic "Probiz" 1 capsule 2 times a day for 5 days.

ENTEROSGEL

a trusted brand

Now sold in

8000 UK outlets

UK market opened in 2014

Sales doubling every year

Boots

let's feel good

Superdrug

LloydsPharmacy

HOLLAND & BARRETT

we're good for you

TESCO

It's our turn to benefit

Ministry of Health of Republic of Tajikistan

World Health Organization
Regional Office for Europe

Protect your family:

make sure your food is safe!

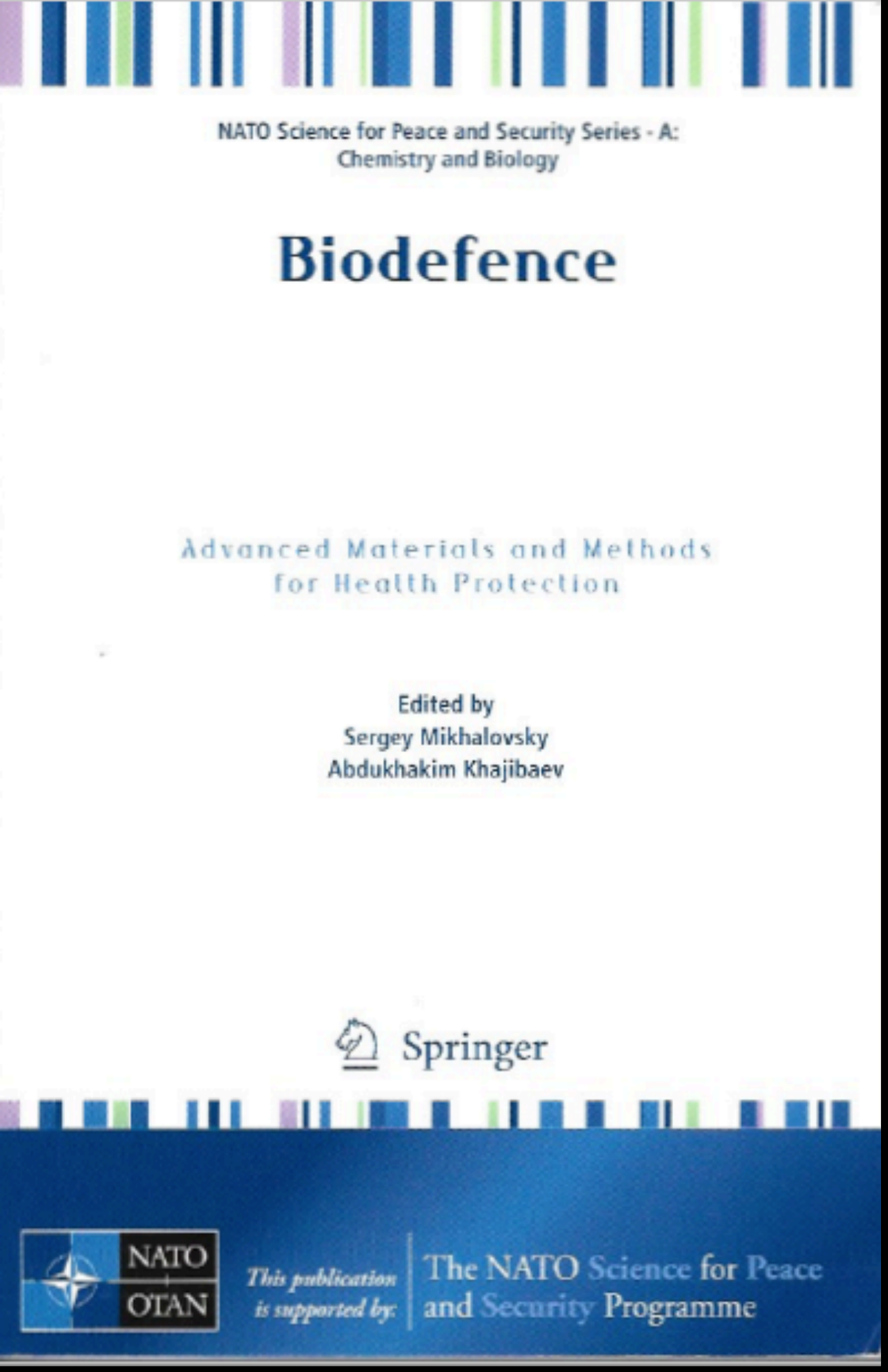
Prevent botulism food poisoning when processing and preserving foods at home

Protect your family

⇒ IF YOU HAVE ANY DOUBTS ABOUT ANY OF THE PREVIOUS POINTS, DO NOT EAT THE FOOD WITHOUT COOKING IT (HEATING AT 80°C FOR FIFTEEN MINUTES, OR MORE THAN 85°C FOR FIVE MINUTES OR BOILING FOR A FEW MINUTES).

⇒ IN CASE OF POISONING SYMPTOMS, YOU SHOULD IMMEDIATELY CALL OR GO TO THE EMERGENCY CARE CENTRE. BEFORE THE DOCTOR COMES, DO GASTRIC LAVAGE AND TAKE ADSORBENTS (SUCH AS ACTIVATED CHARCOAL, ENTEROSGEL OR SMECTA).

Recommended by WHO
in cases of Food Contamination and Botulism
(full booklet available upon request)



Chapter 21

Enterosgel: A Novel Organosilicon Enterosorbent with a Wide Range of Medical Applications

Volodymyr G. Nikolaev

Abstract Enterosgel® is a polymethylsiloxane based hydrogel produced by polycondensation of methylsilicic acid with the loss of water and formation of siloxane bonds (≡Si-O-Si≡). Upon organosilica gel drying, a solid mesoporous adsorbent (xerogel) with specific surface area of up to 300 m^2g^{-1} is formed. The xerogel content in the medicinal preparation Enterosgel is about 7%. The sorption process by Enterosgel follows two mechanisms – molecular adsorption and co-sedimentation in the gel. Compared with activated carbons most commonly used as oral sorbents (enterosorbents), Enterosgel possesses lower capacity towards compounds with molecular weight below 1,500 Da, but it is a much more potent adsorbent than activated carbons in its binding ability towards high molecular weight compounds such as proteins and bacterial endotoxins. In many experimental and clinical studies which evaluated oral use of Enterosgel for treatment of wound infection, abdominal sepsis, ischemic hypoxia, acute intestinal infections, viral hepatitis, complications of chemo- and radiotherapy of cancer, it has been demonstrated that enterosorption led to normalization of intestinal microflora, suppression of lipid peroxidation and oxidative modification of plasma proteins, restoration of detoxifying and synthetic liver functions, improvement of renal functions, as well as decreased manifestations of systemic toxicity. These useful sorptive properties along with positive clinical results allow the consideration of Enterosgel as an effective enterosorbent and open a wide potential for its use in combined treatment of diseases requiring long-term oral chemotherapy, such as tuberculosis, AIDS, rheumatoid arthritis and viral hepatitis C.

Keywords Oral sorption (enterosorption) • Polymethylsiloxane • Hydrogel • Chemotherapy

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S. Mikhalovsky and A. Khajibaev (eds.), *Biodefence*, NATO Science for Peace and Security Series A: Chemistry and Biology, DOI 10.1007/978-94-007-0217-2_21,

Chapter in NATO's Biodefence publication

(23 page chapter available upon request)

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LGC
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CB7 5WW
UK

Tel: +44 (0)1638 720500
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Email: info@lgcgroup.com
www.lgcgroup.com

Olga Trush
Bioline Products s.r.o.
Krakovska 1338/10
Prague 1, 110 00
Czech Republic

Date Issued: 15 February, 2018

CERTIFICATE OF ANALYSIS: 133626

LGC Supplement Screen

Consignment Number:	post kk013863282gb
Delivery Date:	7 February, 2018
Date Analysis Commenced:	7 February, 2018
Purchase Order Number:	N/A

Product:	ENTEROSGEL	**Pack Size:**	225g
Flavour:		**Programme:**	Custom
Batch No:	L309170051	**Sample Type:**	Routine
Batch Expiry:	03/2020	**LGC Reference:**	978044

The sample was analysed using documented LGC screening methods for the compounds specified within the Testing Specification: Nutritional Supplements V1.

GCMS:
None were found.

LCMS:
None were found.

Signed
Suzanne Lister
Senior Scientist

Test results apply to the portion of product taken.
* or isomers of - as specified within the Testing Specification.

R-2616

Enterosgel batch no L309170051, has undergone rigorous testing for a range of substances banned by **WADA (the World Anti Doping Agency)** to provide the highest level of assurance that they are safer for athletes to use.

Enterosgel was used in Olympic Athletes First Aid Kits in Sochi in 2014

Medical Device Class IIa

- It is ingested (swallowed) but not digested.
- It is used ON the body, not IN the body - enterosgel does not leave the gut to cross into the bloodstream or bodily tissues

Medical Device Class IIa

- Enterosgel does not achieve its principal intended action in or on the body by immunological, pharmacological or metabolic means.
- Therefore, Enterosgel is an included **<u>Medical Device Class IIa on the ARTG</u>**
- Class IIA is the same category as contact lenses, catheters and intravenous tubing.

ENTEROSGEL

Key Features

It’s a Tasteless Gel

Take Enterosgel straight off the spoon followed by 100-200ml fluid; or mixed into water, juice or warm tea.

Who can take Enterosgel?

- **Children from 1 year old**
- **Pregnant women**
- **Breastfeeding mothers**
- **Vegetarians and Vegans**
- **Those with Peptic Ulcers, Kidney or Liver Damage**
- **Those who can not endure regular detoxification methods**
- **Diabetics (sugar free)**
- **Those with Allergic Diseases (hypoallergenic)**
- **Elite Athletes - contains no banned substances**

Who can take Enterosgel?

Plus, it can be taken in the absence or presence of stomach and intestinal illness symptoms

Contraindications

- **Intestinal Atony**
- **Intolerance based on prior use**

Side Effects

- **Constipation is rare, but is the most common reported side effect. For people prone to constipation, recommend increased fluid intake, begin their dose on 1/3-1/2 of the standard dose, and encourage fruits and foods that may help bowel movements such as pear, kiwi, dates.**
- **PIL also lists nausea and vomiting.**

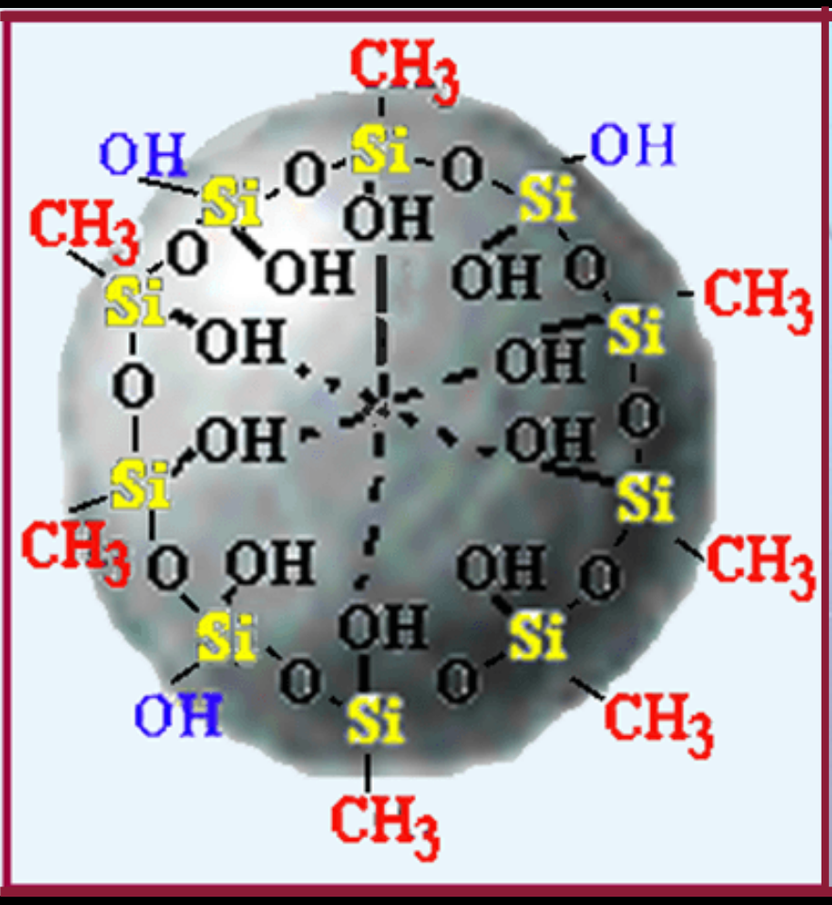
Overdosing

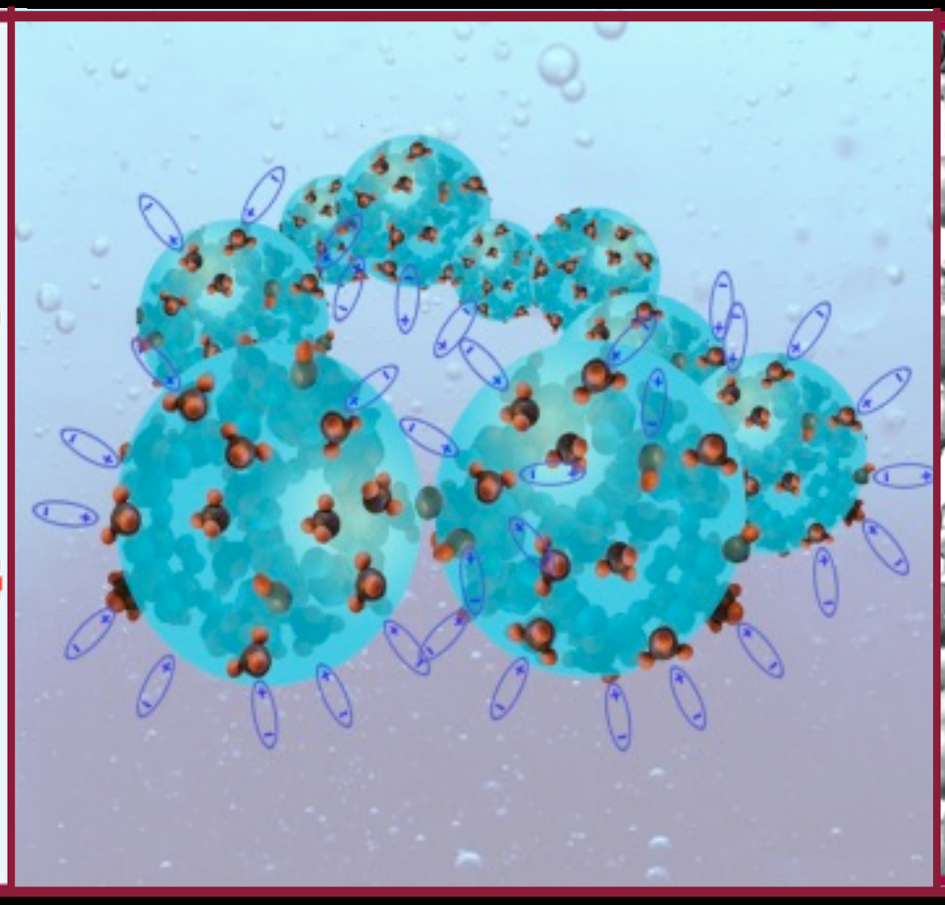
- **No report of overdosing of Enterosgel has ever been reported in 30 years of use.**
- **Constipation may occur in some individuals.**

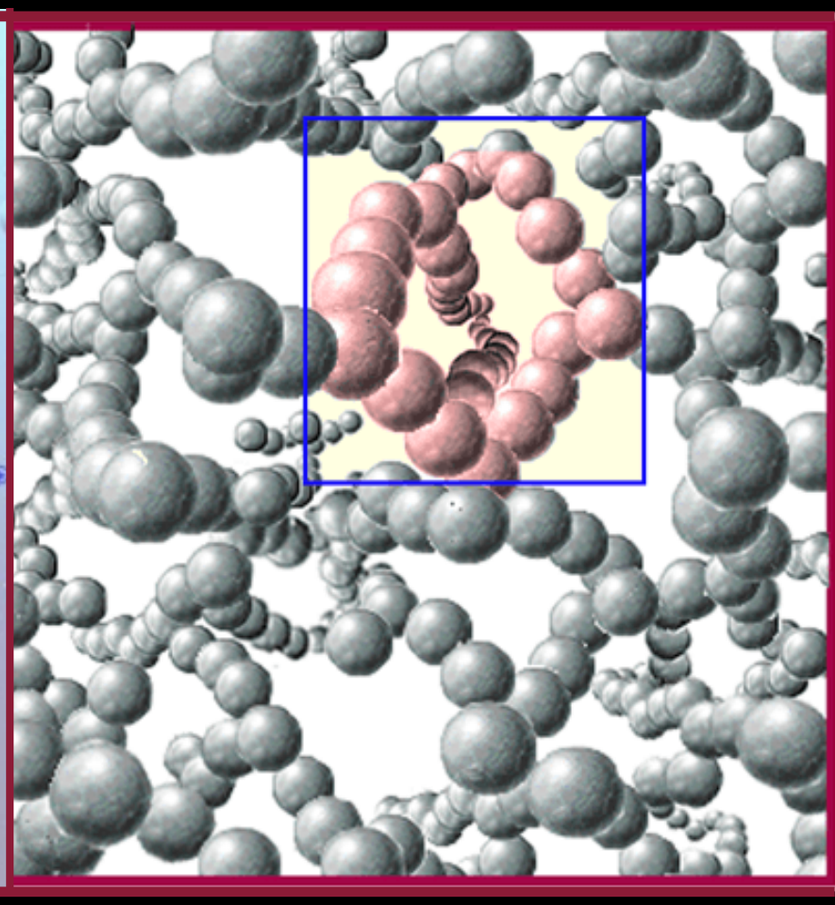
Product Care

- **Keep at 4-25’C**
- **Do not refrigerate. Do not freeze.**
- **Thawed Enterosgel loses its gel consistency and becomes water and white powder. Its sorption function will also be lost.**
- **Best kept on the shelf or in the medicine cabinet**

Ingredients

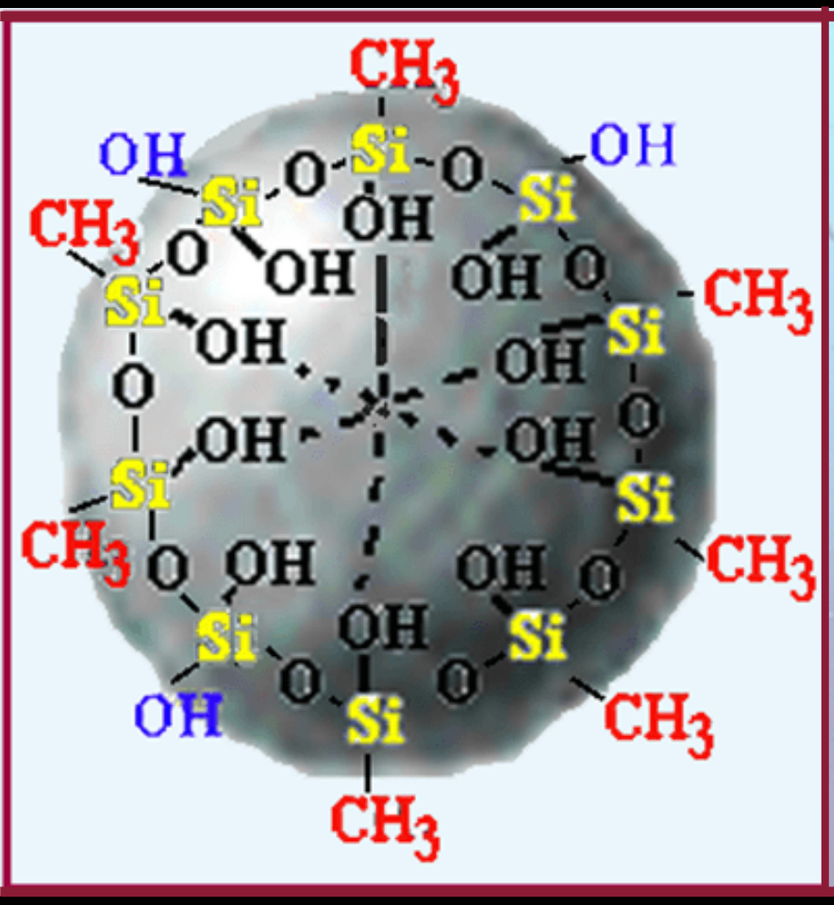


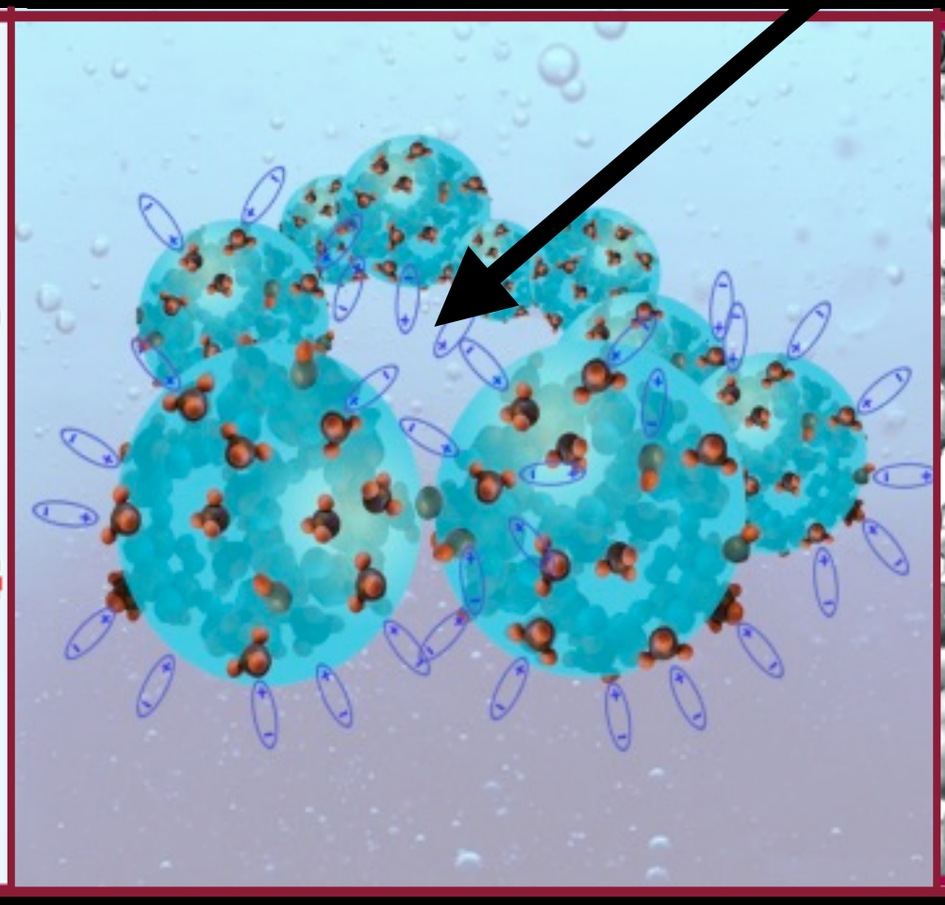


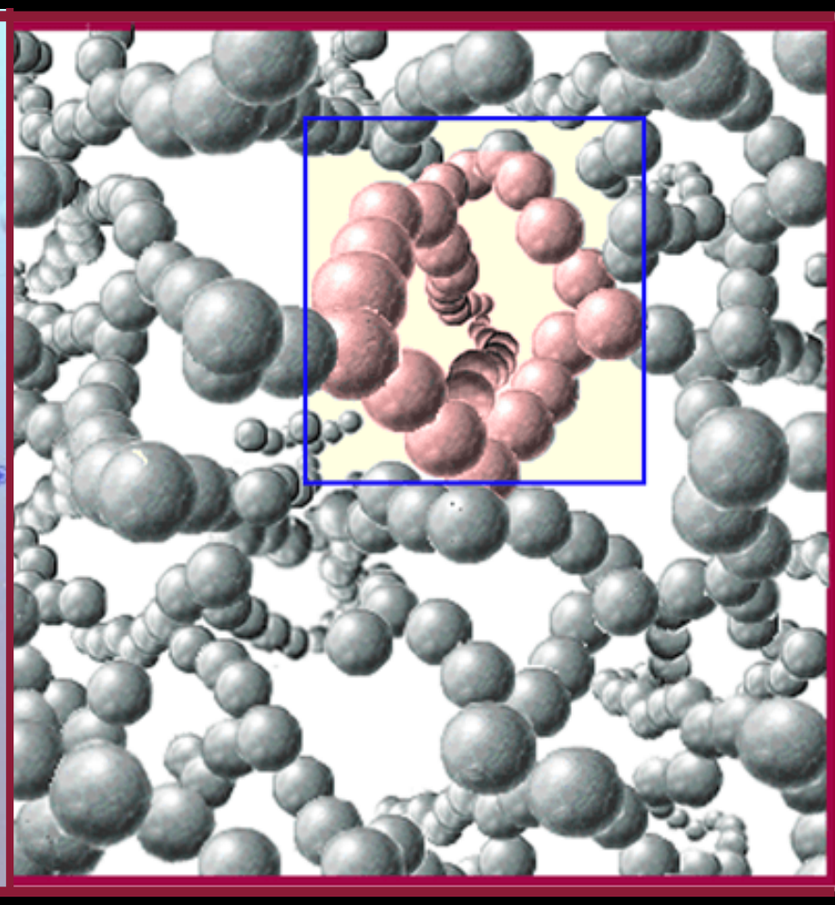


Polymethylsiloxane Polyhydrate (PMSPH) 70%
and Purified Water 30%

Ingredients



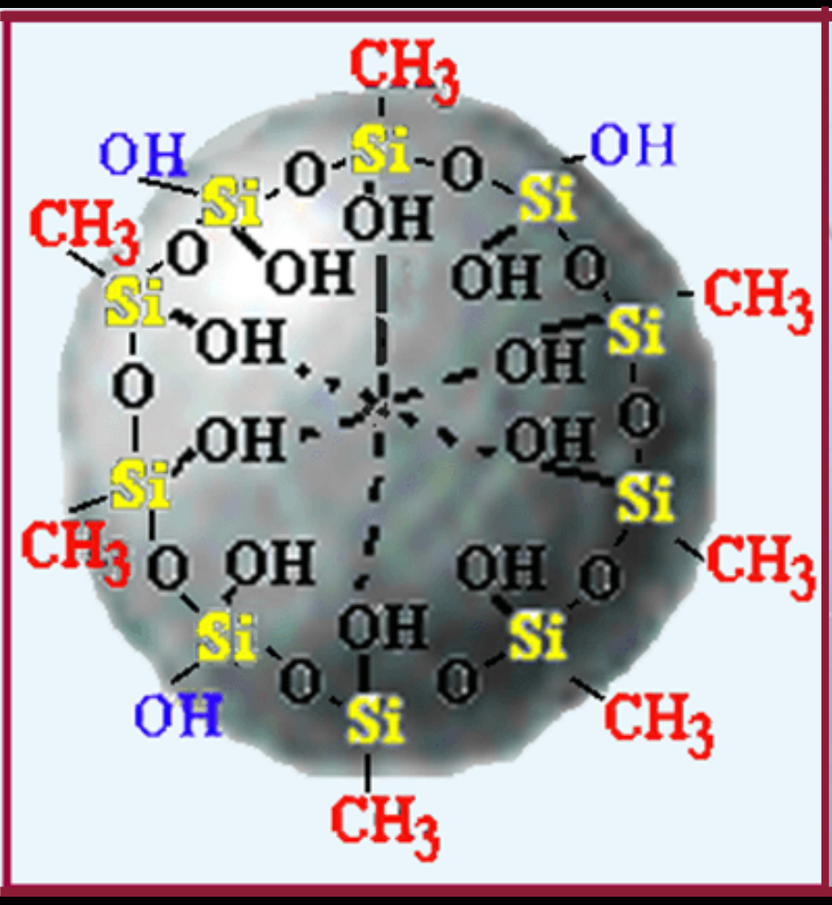


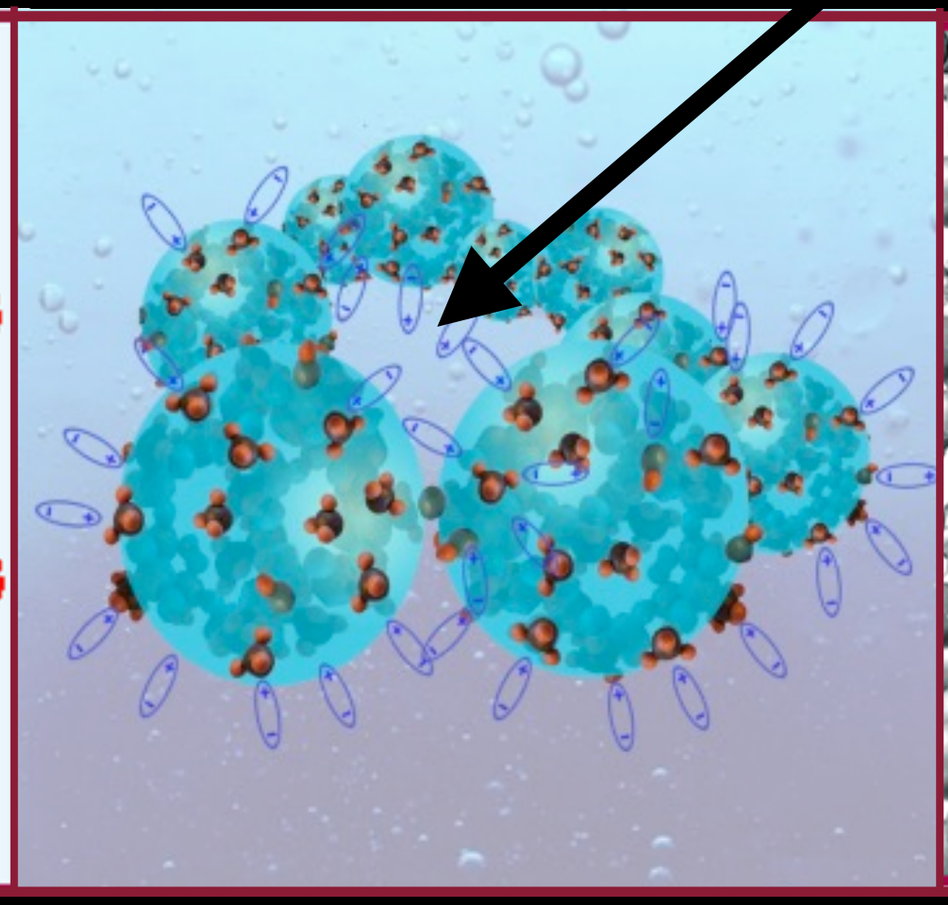


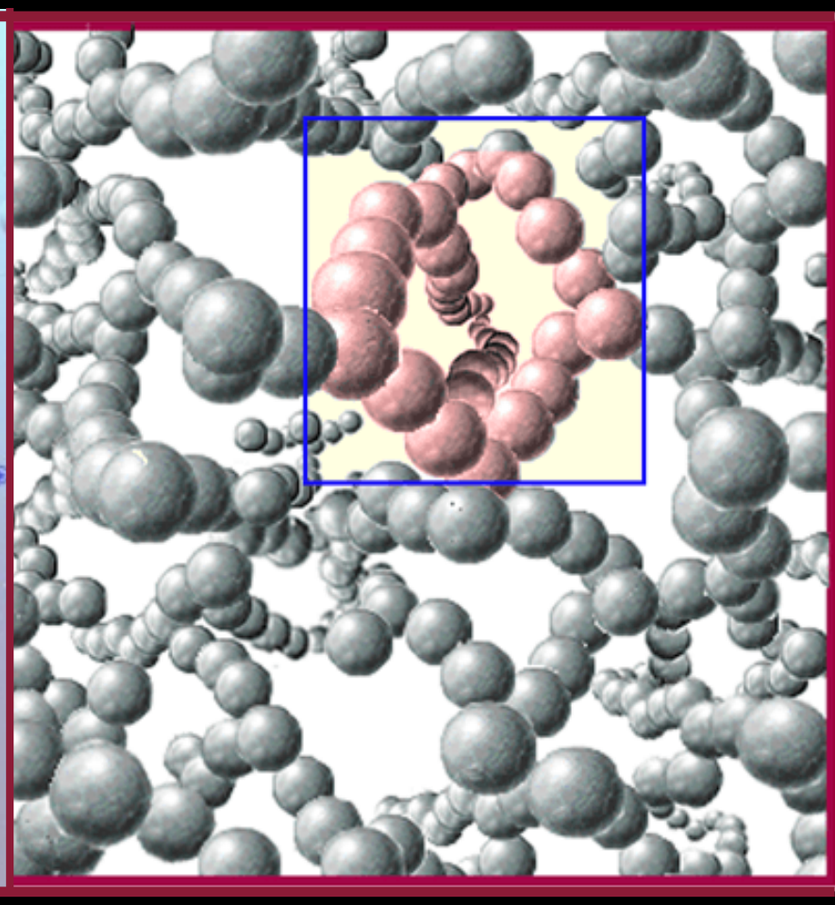
Look at the structure of silicon Enterosgel.
The hydroxyl and methyl groups linked oxygen bonds.

Globules form pores (shown by arrow).

Ingredients





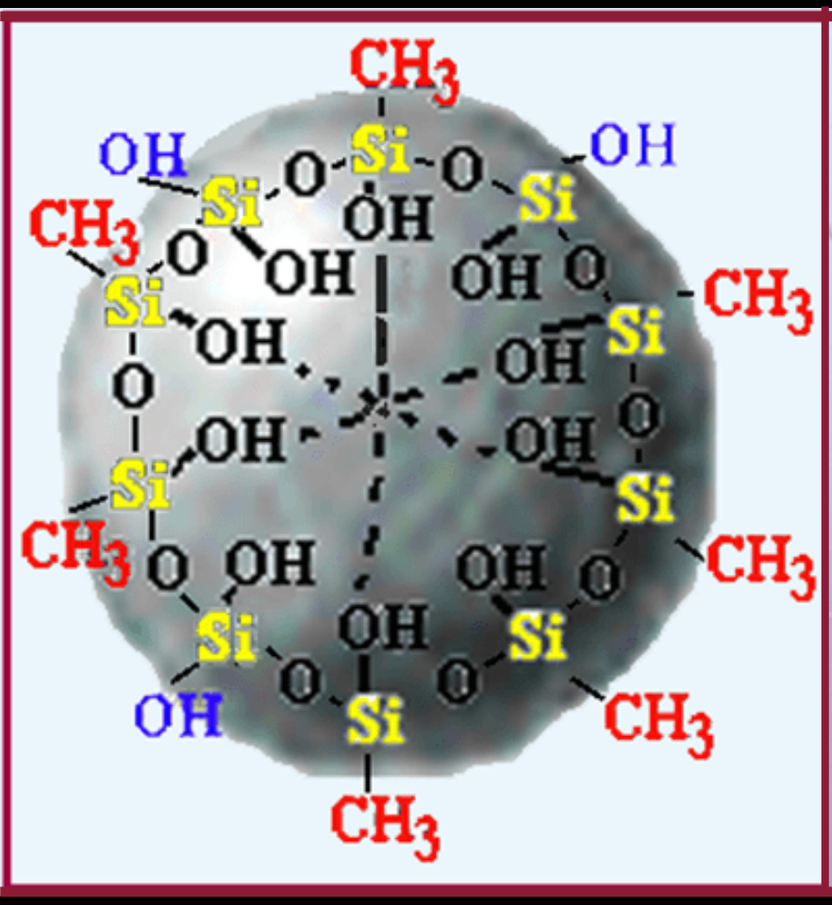


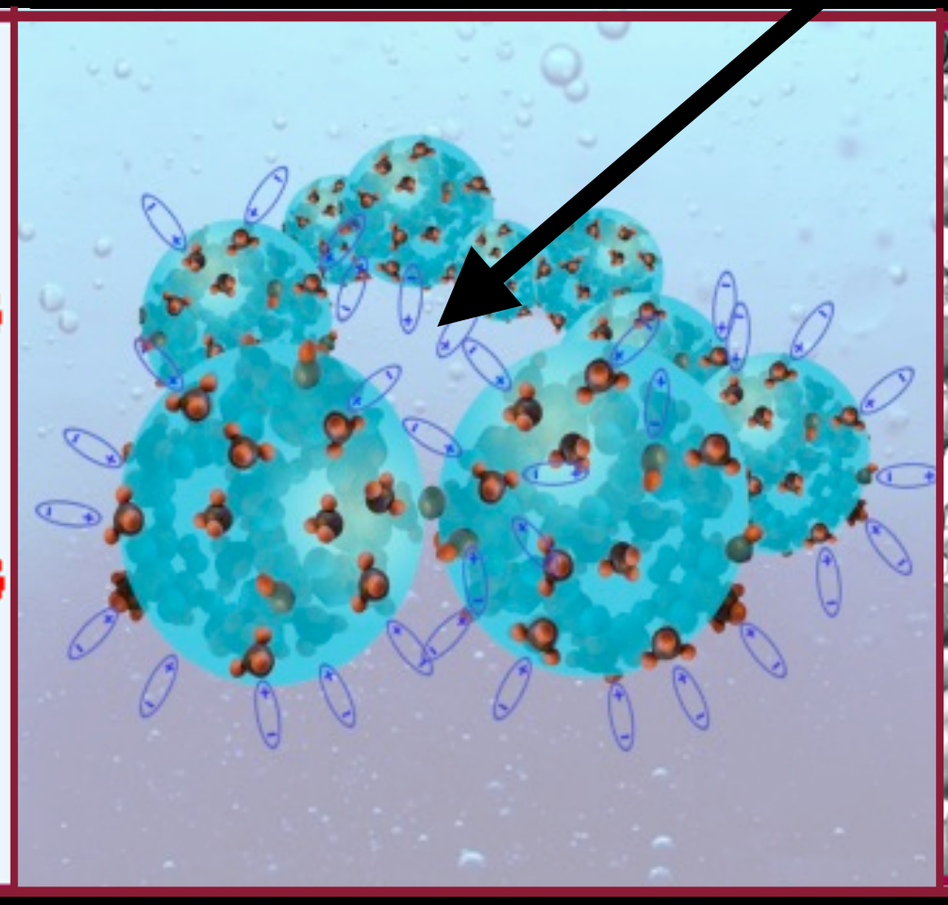
<u>Unique Properties</u>

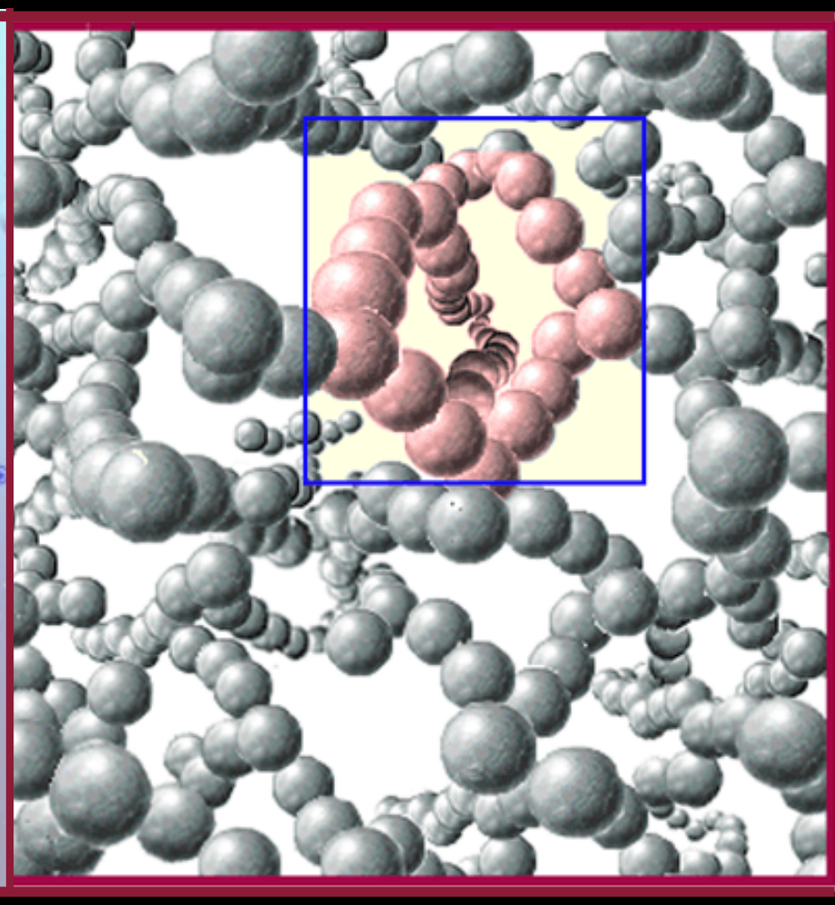
Hydroxyl groups (-OH) in the middle are hydrophilic
Methyl (-CH3) on the outside makes it hydrophobic

Activated Charcoal (mostly hydrophobic)
Mineral Sorbents such as Silica (mostly hydrophilic)

Ingredients





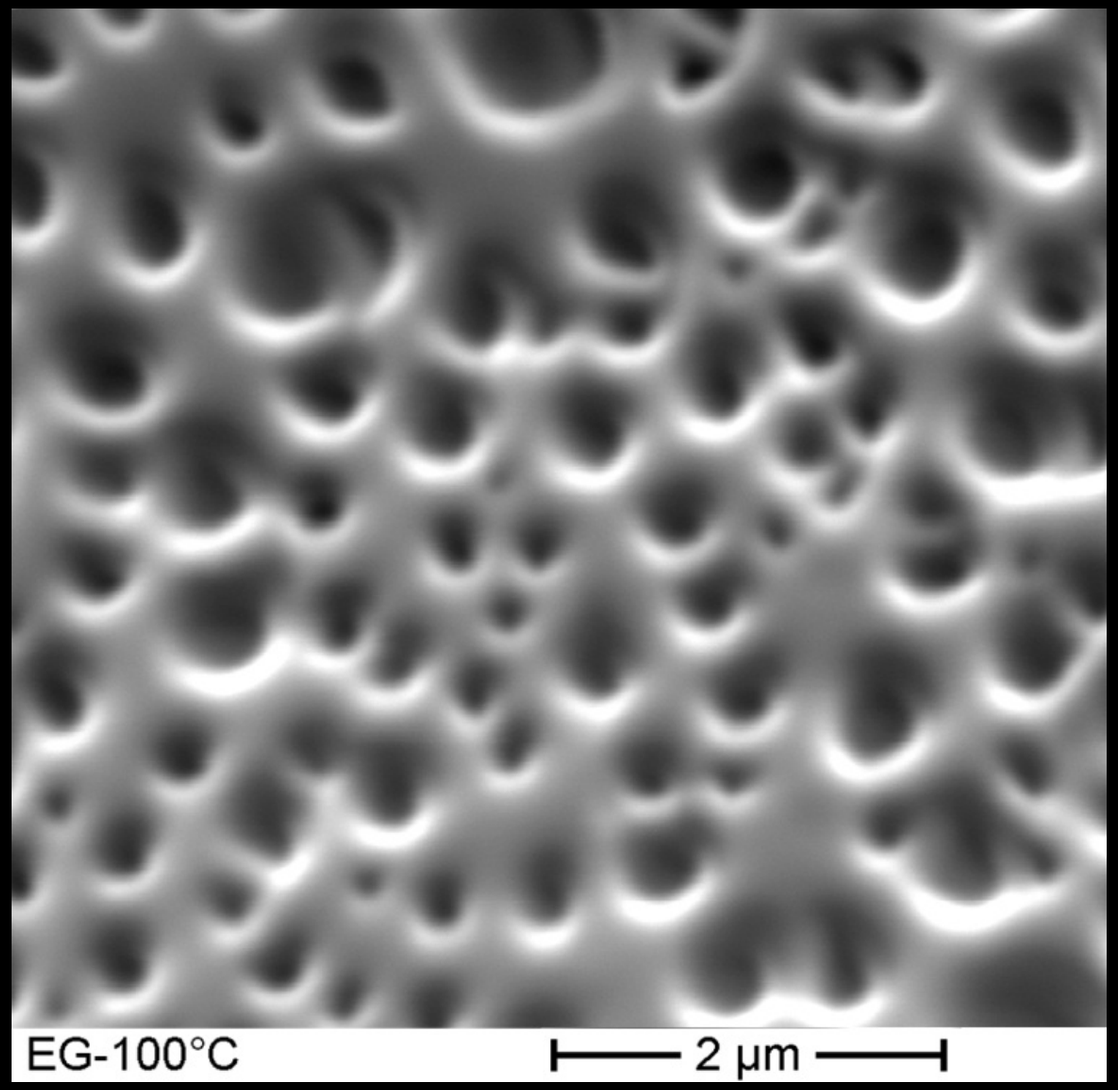


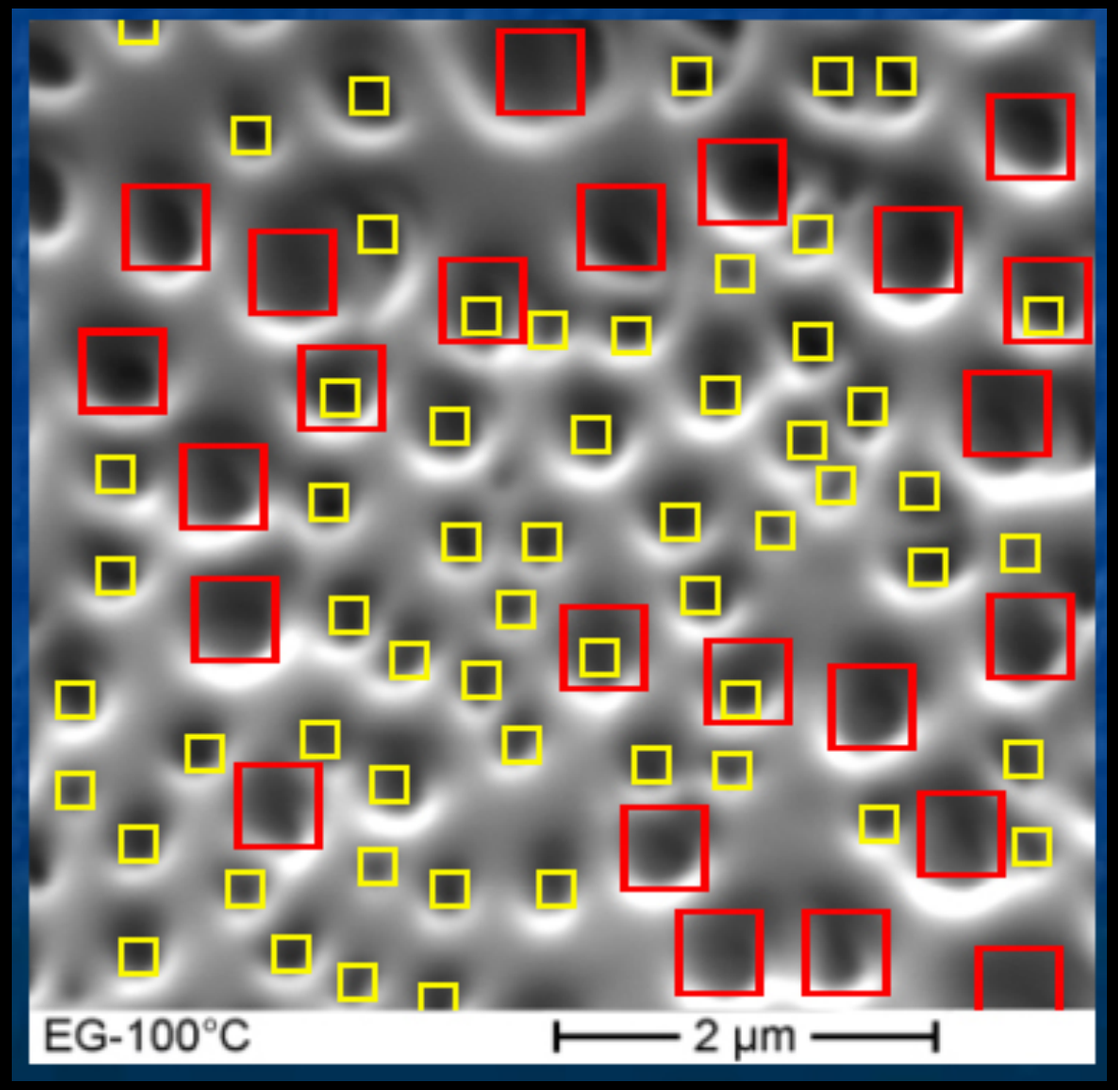
Allows PMSPH to adsorb both hydrophilic and hydrophobic substances from aqueous solution.

Each 5g of Enterosgel has a surface area of approx 1000m2

Gun'ko VG, et al. Comparative characterization ofpolymethylsiloxane hydrogel and silylated fumed silica and silica gel. *Journal of Colloid and Interface Science*, 308: 142-156 (2007)

The Pores

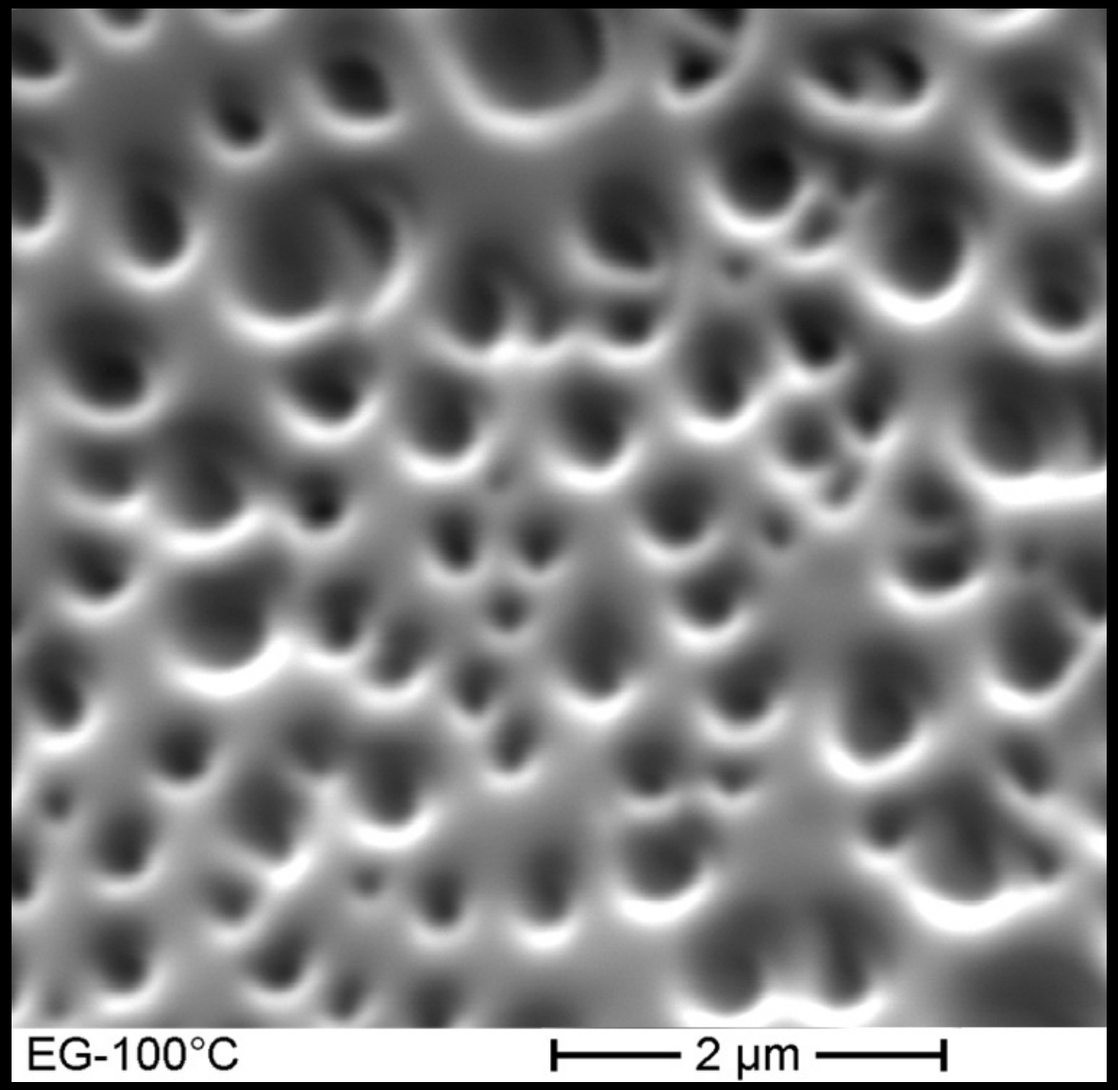


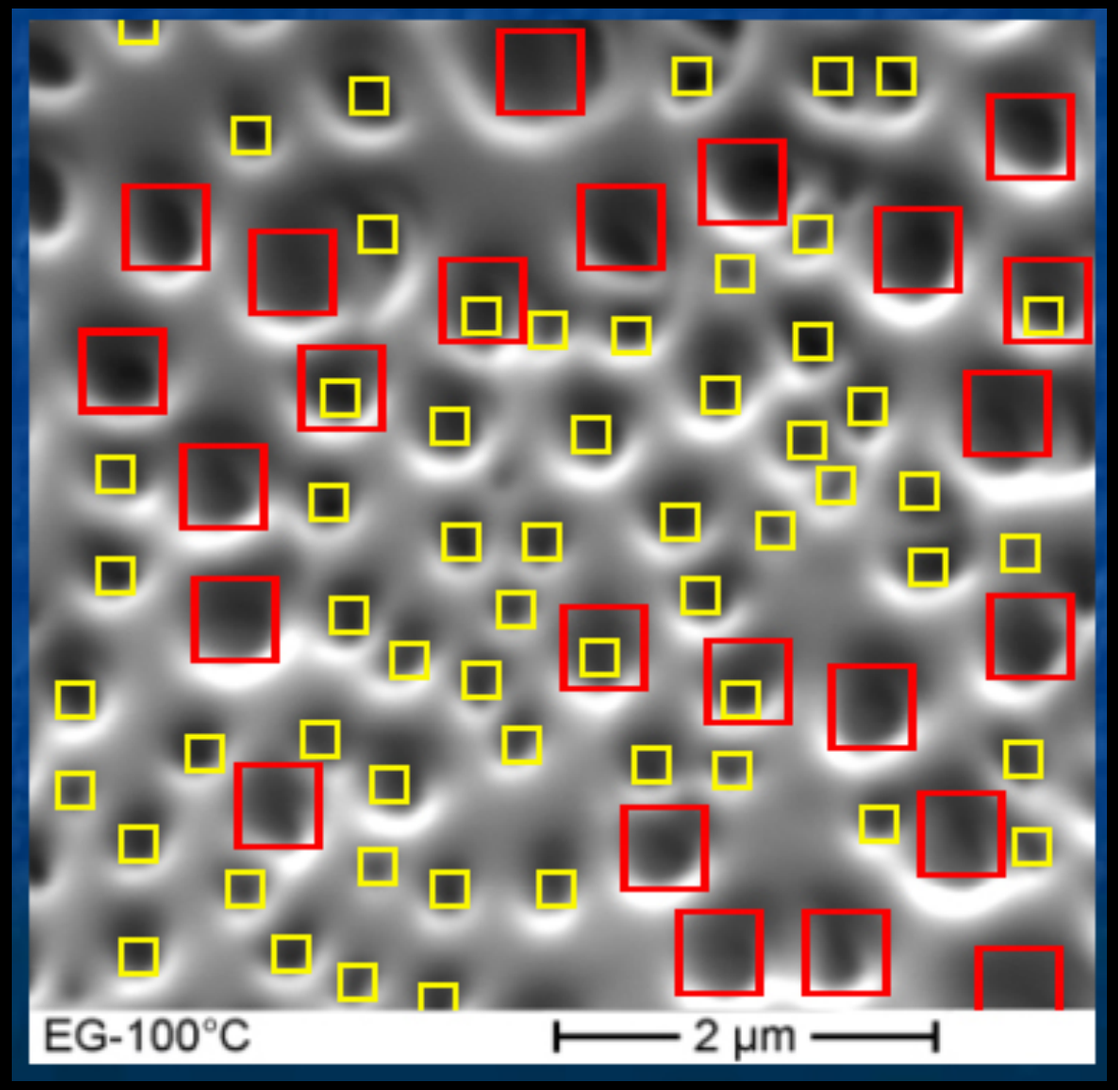


Porous structure has even numbers of Micropores (<2nm in diameter) and Mesopores (2-50nm in diameter (mean 20nm))

Gun'ko VG, et al. Comparative characterization ofpolymethylsiloxane hydrogel and silylated fumed silica and silica gel. *Journal of Colloid and Interface Science*, 308: 142-156 (2007)

The Pores





"Enterosgel is not absorbed,
is not metabolised
and excreted unchanged"

Mikhalovsky S., Khajibaev A. Biodefence (NATO Science for Peace and Security Series A Chemistry and Biology), Advanced Matherial and Methods for healths protection. — Springer, Netherlands, 2011. — 375 c. — ISBN 978-94-007-0219-6

What does it absorb?

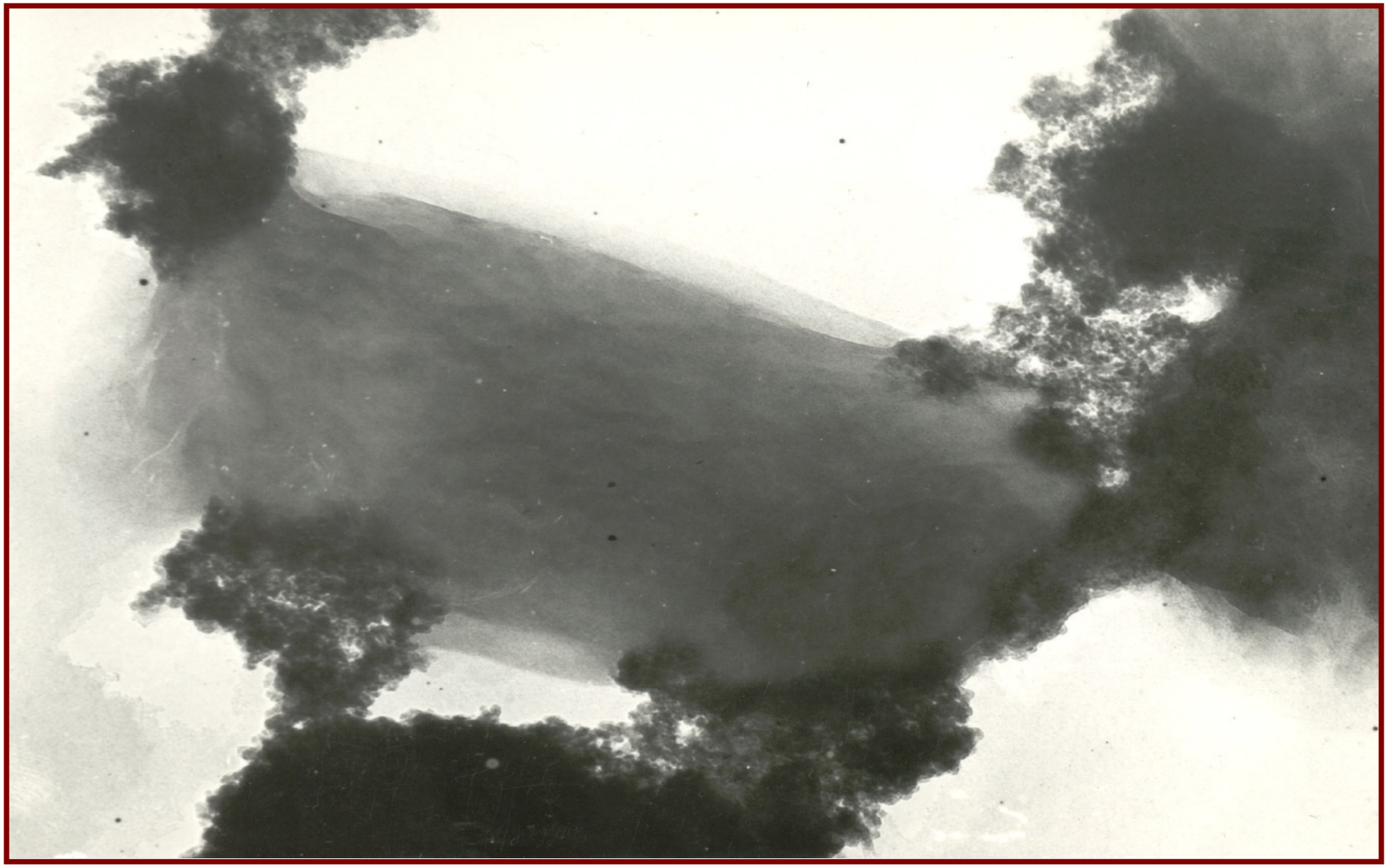
- Activated Charcoal - significantly higher capacity for adsorbing small molecular weight substances (60Da (urea) to 1355 Da (vitamin B12)
- PMSPH - significantly higher capacity for adsorption of large molecules of proteinaceous origin 23.3kDa (trypsin) to 150kDa (immunoglobulin G)
- “PMSPH has 4-14x higher adsorption than the best activated charcoal of Lipopolysaccharide (LPS) calculated per daily dose.”

Gun’ko VG, et al. Comparative characterization ofpolymethylsiloxane hydrogel and silylated fumed silica and silica gel. *Journal of Colloid and Interface Science*, 308: 142-156 (2007)

What does it absorb?

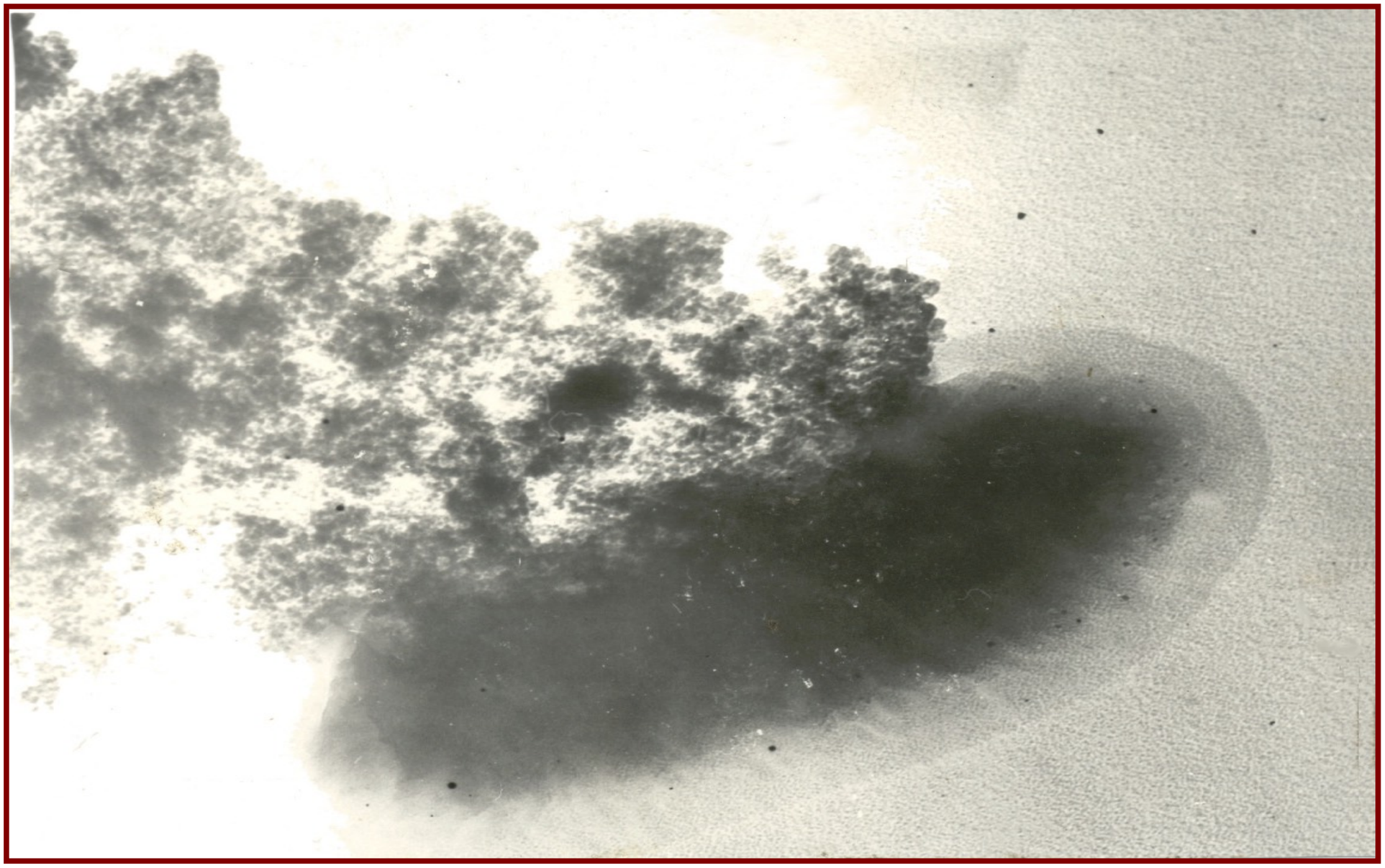
- Medium-molecular weight molecules
- Opportunistic non-beneficial microbes in the gut
- Radioactive nucleotides (Enterosgel was used during the Chernobyl Nuclear Power Plant Disaster for those with Acute Radiation Sickness).
- Waste products such as histamine and cholesterol that may otherwise be reabsorbed back into the body in the bowel. Instead it is irreversibly bound to Enterosgel so it passes through the bowel and out.
- Some heavy metals
- Endotoxins (chemicals made by the bacteria or virus that give us symptoms of unwellness).

Enterosgel eliminates non-beneficial intestinal microflora



Enterosgel actively introduced to the cell surface of *Shigella Flexneri*.

Enterosgel eliminates non-beneficial intestinal microflora



Enterosgel penetrates the lipopolysaccharide layer of *Salmonella typhimurium* and destroys the cell wall.

Microbiology Dept, Kiev Med. Academy Postgraduate Education.

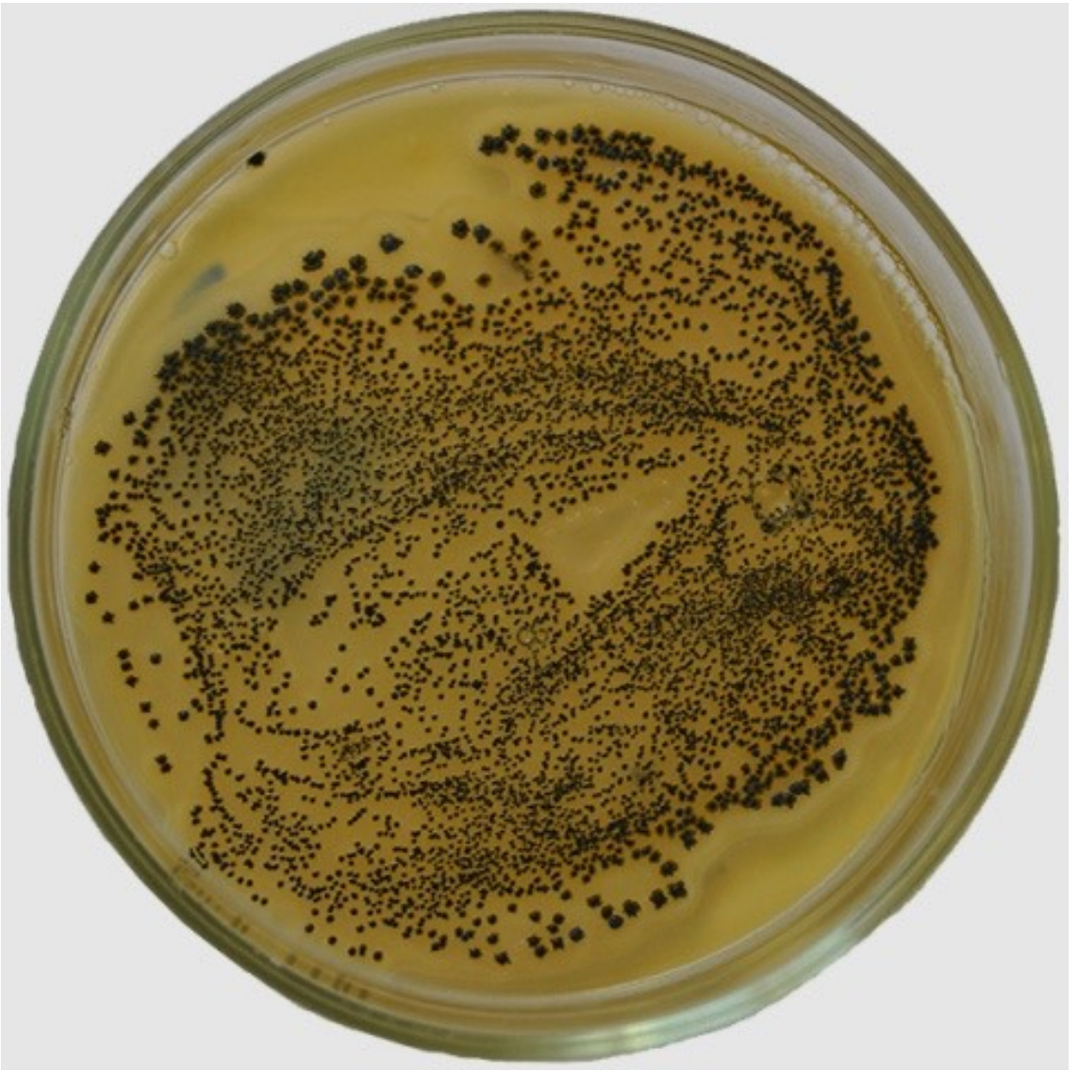
Jarisch-Herxheimer Reaction

- **This is the reaction to endotoxin-like products released by the death of harmful microorganisms within the body during antibiotic treatment.**
- **Typically, the death of these bacteria and the associated release of endotoxins or lipoproteins occurs faster than the body can remove the substances. It usually manifests within a few hours of the first dose of antibiotic as fever, chills, hypotension, headache, tachycardia, hyperventilation, vasodilation with flushing, myalgia, exacerbation of skin lesions and anxiety.**

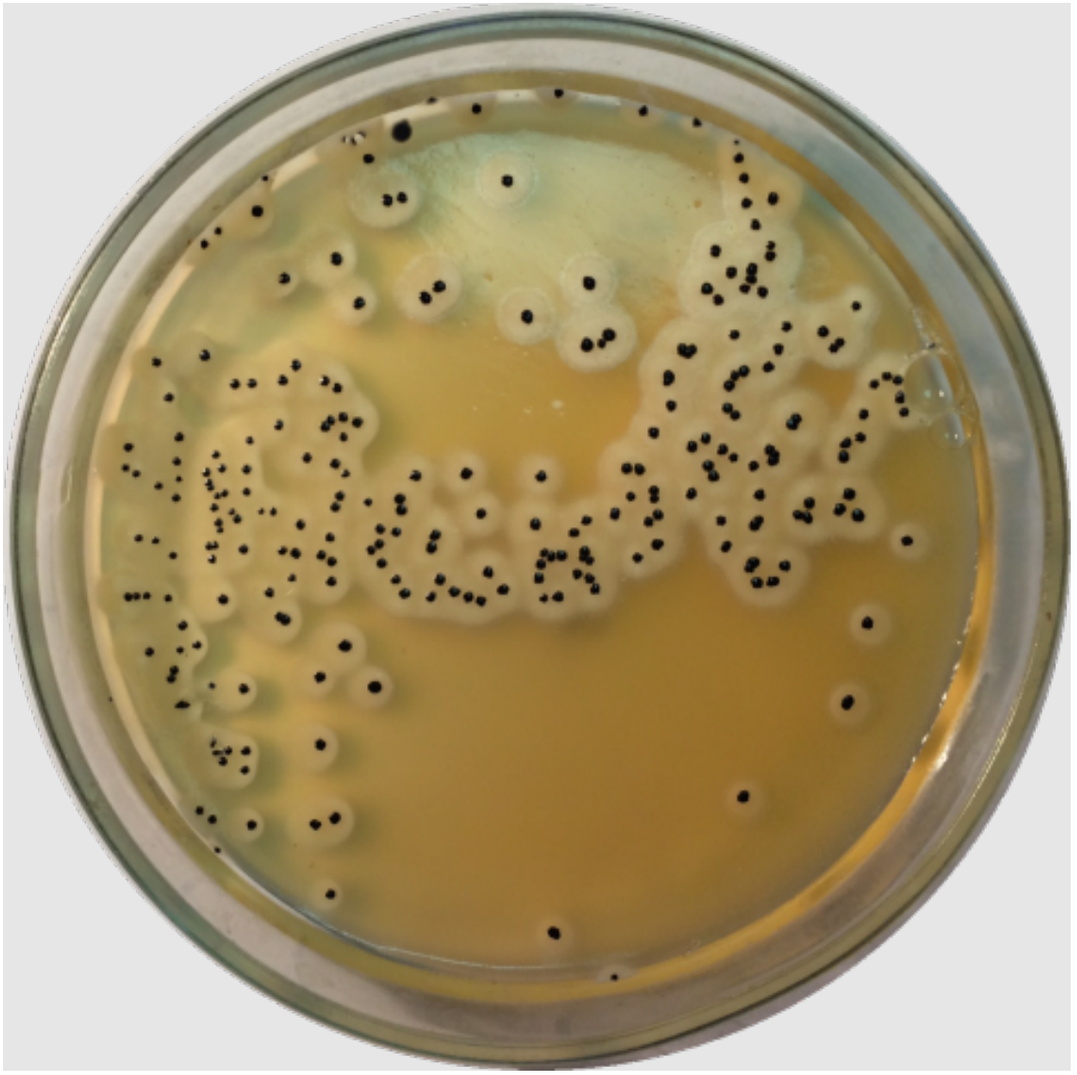
Enterosgel cleans the intestinum

- Enterosgel cleanses the intestines from dying bacteria via adsorption to the bacterial cell wall (including when exposed to antibiotics).
- Old and dying bacteria lose negative charge and become vulnerable targets for Enterosgel.
- Enterosgel has the highest affinity towards the absorption of Gram negative Bacterial Endotoxins, thus reducing the amount of unbound endotoxins available for absorption through the bowel into the body.
- Enterosgel can be used 2 hours away from Antibiotics

Enterosgel added to the culture medium reduces the growth of Staphylococcus aureus strain 722 and it's production of staphylococcal enterotoxin A (SEA).



Control: colony-forming units $6X10^{-12}$



18.2% Enterosgel colony-forming units 10^{-11}

A remedy for inhibiting the growth of Staphlycocci, suppressing the Staphylococcal Enterotoxins production and removing them from biological substrates. Fluer F.S. et al, 2016

Enterosgel does not absorb…

- Normal gut microflora attaches to the enterocytes of the mucus layer covering the epithelium. Enterosgel particles are not immersed into mucus, and normal flora does not interact with Enterosgel. This is in part due to the hydrophobic nature of the Polymethylsiloxane Polyhydrate molecular compound.
- Mineral substances are minimally absorbed by Enterosgel, because the pore size of its silicon matrix provides sorption of substances with the average molecular weight or higher.

The main clinical effects of Enterosorption

- helps stop diarrhoea or shortens the duration of diarrhoea;
- relieves symptoms of indigestion;
- accelerates the elimination of alcohol from the body (so there is less for the liver to process);
- helps restore beneficial intestinal microflora;
- protects gastrointestinal mucous membrane and promotes healing of its lesions;
- by using sorption in the gut for waste elimination, there is a reduction of processing load on the liver and kidneys
- can be used to alleviate symptoms of morning sickness.

Impaired Digestion and Absorption

This study compares two groups with diarrhoeal syndrome; one group used a complex treatment plan and the study group added Enterosgel to the complex treatment plan. The group who also took Enterosgel had a dramatic reduction in:

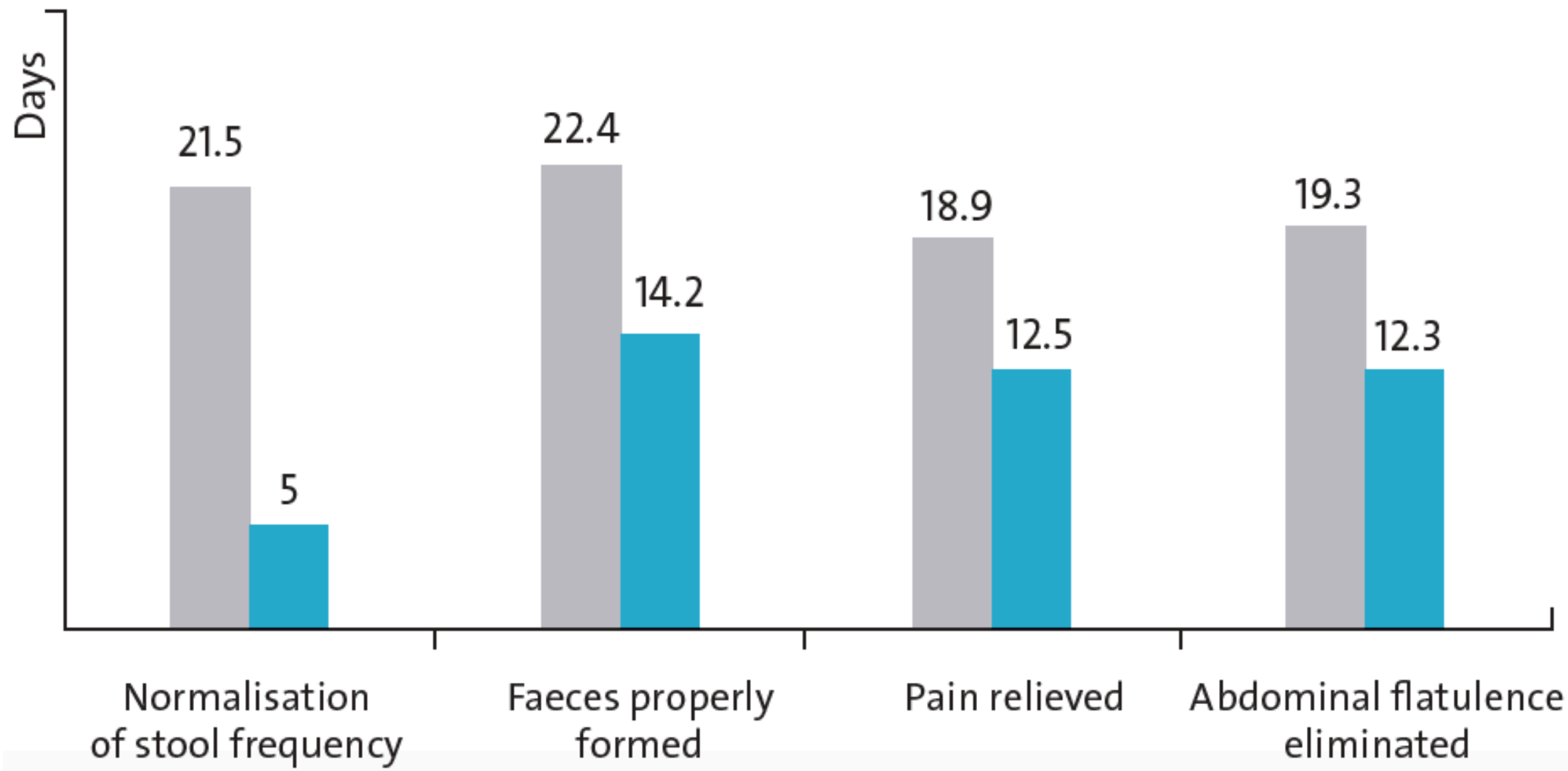
- the time to normalised stool form
- discontinuation of pain syndrome and flatulence
- alleviation of the inflammation
- improved food digestion as shown by coprology results
- a recovered normal large intestinal microflora pattern.

CLINICAL STUDY

Maev I.V. Brief report: Results of clinical use of enterosgel in patients with pathologies of the digestive system accompanied with chronic diarrhoea syndrome. Moscow State Medical and Dental University, Moscow, Russia. July 20, 1999

Impaired Digestion and Absorption

Use of Enterosgel in the treatment of gastrointestinal disease associated with impaired digestion and absorption.



CLINICAL STUDY

Maev I.V. Brief report: Results of clinical use of enterosgel in patients with pathologies of the digestive system accompanied with chronic diarrhoea syndrome. Moscow State Medical and Dental University, Moscow, Russia. July 20, 1999

Endotoxin Reduction

In this study, Enterosgel was given for 20 days thrice daily in 25 people with 1-3 chronic diseases in remission (adnexitis, atopic dermatisis (eczema) autoimmune thyroiditis, bronchitis, gastritis, gastroduodenitis. Chronic endotoxin aggression (CEA) was detected in 24 of the 25 people (96%).

Enterosgel enterosorption reduced the circulating Endotoxin levels by 56%.

Chernikhova EA, et al. Enterosorption as an approach to the elimination of chronic endotoxin aggression. *Fiziologiya Cheloveka (in Russian), 33 (3): 373-374 (2007).* Copyright Pleiades Publishing Inc, 2007.

Endotoxin Reduction

As a result of administration of Enterosgel

- the number of subjects who established normal LPS levels (0.6 EU/ml) increased 7-fold
- with endotoxin serum levels increasing 2-fold from 0.6 to 1.25 EU/ml
- and in the 14 patients with high LPS concentrations (1.5-3.0 EU/ml) their levels decreased almost 5-fold
- 25% (6 people) of the study group had no reduction in Endotoxin levels. One person in this *unresponsive* group had a car accident, and another heavily drank the day before blood sampling.

Chernikhova EA, et al. Enterosorption as an approach to the elimination of chronic endotoxin aggression. *Fiziologiya Cheloveka (in Russian), 33 (3): 373-374 (2007).* Copyright Pleiades Publishing Inc, 2007.

Endotoxin Reduction

The authors concluded that Enterosgel (in monotherapy) has the ability to lower intestinal endotoxin concentrations in the bloodstream of patients with chronic inflammatory diseases.

Chernikhova EA, et al. Enterosorption as an approach to the elimination of chronic endotoxin aggression. *Fiziologiya Cheloveka (in Russian), 33 (3): 373-374 (2007).* Copyright Pleiades Publishing Inc, 2007.

Recovery of Intestinal Microbiota

In a study of people with grade 1-2 intestinal bacterial overgrowth, trice daily Enterosgel produced a self-reported improvement in general well-being as early as by the 4th or 5th day of treatment in 98%.

Microbiological data revealed that 100% of patients had recovered intestinal microbiota after a complex intestinal bacterial overgrowth treatment programme that included Enterosgel.

You will notice in the next slide that beneficial bacteria flourished as opportunistic fungus and bacteria were adsorbed by Enterosgel.

Paliy I., Tchernobroviy V. Clinical efficacy of Enterosgel in complex treatment of intestinal dysbiosis

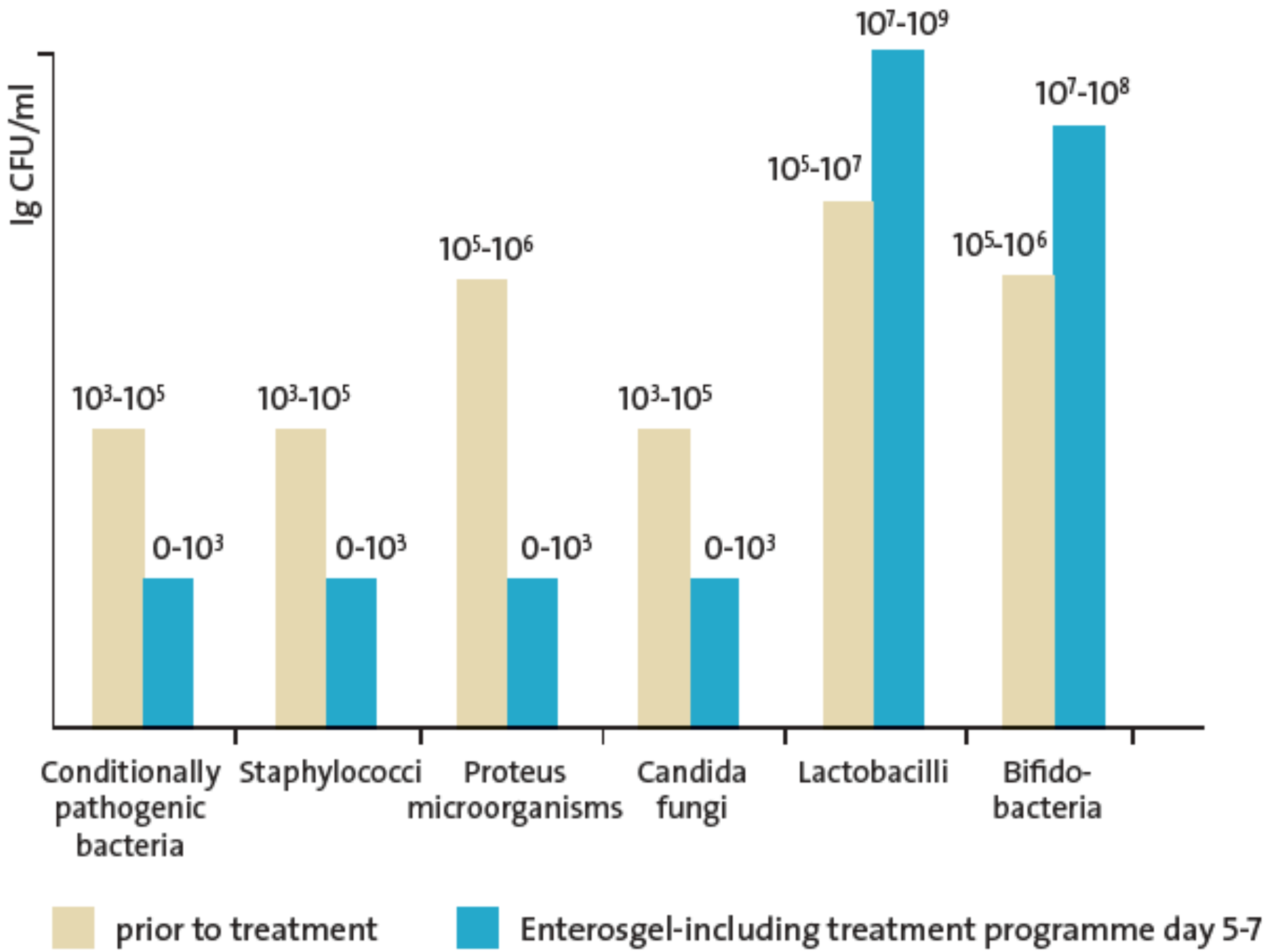
Recovery of Intestinal Microbiota

Microflora	Prior to treatment	After treatment	P_{1-2}
Pathogenic microflora of bowel bacterial family	10^2-10^6	0	**
Total count of E.coli bacteria	10^2-10^6	10^8-10^9	**
E.coli with a slightly expressed enzymatic properties	0-10^6	10^2-10^3	**
Hemolyzing E.coli	20-60%	0	**
Conditionally pathogenic bacteries	10^3-10^5	0-10^3	*
Enterococci	0	10^5-10^6	**
Staphylococci	10^3-10^5	0-10^3	*
Proteus genus-related microbes	10^5-10^6	0-10^3	**
Candida genus-relaged fungi	10^3-10^5	0-10^3	*
Lactobacteria	10^5-10^7	10^7-10^9	*
Bifidum-bacteria	10^5-10^6	10^6-10^8	*

*– significant difference grade
** – highly significant difference grade

Paliy I., Tchernobroviy V. Clinical efficacy of Enterosgel in complex treatment of intestinal dysbiosis

Use of Enterosgel in the treatment of intestinal bacterial overgrowth.



Paliy I., Tchernobroviy V. Clinical efficacy of Enterosgel in complex treatment of intestinal dysbiosis

Efficacy of Enterosgel® in Treatment of Rotavirus Infection in Newborns

adapted from Dzyublik I, Shunko E, Barbova A (1997). Use of Enterosgel for treatment of rotavirus infections in newborns. In: Biosorption methods and preparations in prophylactic and therapeutic practice, First Conference, Kyiv (In Ukranian). pp 17-18

Clinical or Laboratory Index	Enterosgel® Treatment Group, days	Control Group, days
Respiratory disturbance (altered breathing)	4.4 ± 0.4*	8.3 ± 0.7
Hyperbilirubinemia (condition of too much bilirubin in the blood)	3.2 ± 0.3*	7.3 ± 1.2
Disturbed thermoregulation (regulating body temperature)	1.7 ± 0.3*	5.4 ± 0.4
Tympanitis (middle ear inflammation with oozing blisters on the eardrum)	2.0 ± 0.2*	5.8 ± 1.5
Regurgitation of milk	1.8 ± 0.5*	6.7 ± 0.8
Diarrhoea	2.1 ± 0.8*	7.3 ± 1.2
Duration of dysbiocenosis (abnormal intestinal microflora)	10.7 ± 2.8*	24.5 ± 2.3
Duration of stay in hospital	12.3 ± 2.7*	33.2 ± 3.1
Duration of excretion of rotavirus in stool	2.3 ± 1.0*	13.4 ± 2.3
Rate of complications:	12.3 ± 2.8*	42.5 ± 4.7
a) Necrotic colitis (condition where portions of the bowel tissue die sometimes causing perforation)	11.2 ± 2.4*	28.3 ± 3.4
b) Toxicosis with exicosis (infectious toxic shock and poisoning with fluid loss/dehydration)	7.3 ± 0.7*	18.7 ± 4.8
Rate of development of hospital acquired infections, (%) (a second infection while staying in the hospital)	16.8 ± 2.1*	52.7 ± 4.8

* Significant compared with control

NOTE: Minimum recommended age is 1 year old for Enterosgel use

Enterosgel® Dosage Chart

Child 1-6 years	1 teaspoon or 5gms or 1/3 sachet	3 times a day	in 50-100mls
Child 7-14 years	2 teaspoons or 10gms or 2/3 sachet	3 times a day	in 50-100mls
15+ years and Adults	1-1.5 tablespoons or 15-22.5gms or 1-1.5 sachets	3 times a day	in 200mls

- add to water, juice or warm tea
- for 3-5 days for acute conditions or short term noxious exposure
- for 2-3 weeks for chronic conditions or long term noxious exposure

*Enterosgel can be used long term. Studies have been done on trials of 5 weeks continuous use (3x daily) with no reported or measured ill effects.

Dosing Guide

In some cases it is advisable to dose Enterosgel based on the evaluation of the clinical situation.

- **Diarrhoea, vomiting or acute onset of stomach and intestinal illness symptoms**

Timing is paramount - immediately take 2 standard single doses after first symptoms, followed by 1 single dose after each bowel movement. Ensure patient remains well hydrated through the illness.
Once the diarrhoea has stopped, it is recommended to continue taking Enterosgel for 5 days in the standard age-related dose. And seek medical advice as soon as possible.

Dosing Guide

- **Flatulence, Bloating, and for management and alleviation of chronic stomach and intestinal illness symptoms**

1 dose 3 times a day for 15-21 days with 100-200ml of fluid.
It is recommended to repeat the course 3-6 times a year.
And seek medical advice as soon as possible.

- **Ingestion of undesirable solution/chemical**

Standard single dose may be doubled in the first three days of treatment. And seek medical advice as soon as possible.

Dosing Guide

- **People living in poor environmental conditions and workers of hazardous industries with potentially higher environmental chemical exposure**

1 dose twice a day for 7-10 days each month.
And seek medical advice as soon as possible.

- **Gastrointestinal cleanse**

1 dose 3 times a day for 15-21 days.
It is recommended to repeat the course 3-6 times a year.
And seek medical advice as soon as possible.

Dosing Guide

How long do I recommend Enterosgel for?

- In the case of short term noxious exposure it is recommended to take Enterosgel for 3-5 days.

- In the case of long term noxious exposure it is advised to take the product for 2-3 weeks.

Courses of treatment of 2-3 weeks duration can be repeated several times a year.

Other Recommendations

For Children sensitive to oral textures:

Try mixing Enterosgel into a like textured drink like pear juice or puree.

Other Recommendations

For Diarrhoea:

- **Oral Rehydration Solution** (ORS)
- Lactobacillus casei ops rhamnosis (**Lactobacillus GG**). Early administration of *Lactobacillus casei sps rhamnosis* (*Lactobacillus GG*) associated with the administration of ORS significantly decreases the amount and duration of diarrhea and increases weight gain compared with ORS plus placebo.

  (Lactobacillus GG administered in oral rehydration solution to children with acute diarrhea: a multicenter European trial. Guandalini S, Pensabene L, Zikri MA, Dias JA, Casali LG, Hoekstra H, Kolacek S, Massar K, Micetic-Turk D, Papadopoulou A, de Sousa JS, Sandhu B, Szajewska H, Weizman Z. J Pediatr Gastroenterol Nutr. 2000 Jan; 30(1):54-60.
- **Zinc** 10-20mg as a syrup or dispersible tablet for 10-14 days for all children with diarrhoea. Reduced duration of diarrhoea episode by 25% and is associated with 30% reduction in stool volume

One Product, Three Sizes

Box of 10x15g Sachet
(10 adult doses)

Small 90g Tube
(6 adult doses)

Large 225g Tube
(15 adult doses)

Any questions please contact
FxMed

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Questions??