

Galactic's Solutions for Pharmaceuticals & Health Care



INFUSION SOLUTIONS - DERMATOLOGICAL PREPARATIONS - MINERAL FORTIFICATION

Galactic has developed a comprehensive set of solutions intended to be used in pharmaceuticals and health care applications. With a brand-new production site fully dedicated to pharmaceutical grade products, Galactic complies with the highest quality standards required by the industry.

Galactic has acquired valuable expertise in biotechnology since its creation 20 years ago. The company develops natural solutions for application in food markets. Specialised in food safety, nutrition and green chemistry, Galactic offers its customers natural and innovative solutions. In collaboration with our customers and scientific partners, Galactic uses the unlimited potential of nature to meet the challenges of our markets with a view to a safer and more sustainable future.



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I. INTRODUCTION



Over the past years, the pharmaceutical industry has turned out to be the main driver of the human progress: it has extended the human lifetime, improved the quality of life and boosted the intellectual and physical performances. The market is booming but the manufacturers must take account of several major emerging trends. Although people today are living longer than before, the number of sick people is steadily increasing. Many factors can alter the health, such as cholesterol and overweight, which may lead to diseases like diabetes, cardiovascular problems, etc. As a result, people increasingly turn to pharmaceuticals. Then people have a stronger understanding of the diseases and the different treatments. They do not only take their doctors' opinion into consideration but do some research. That is the reason why many people nowadays

choose themselves their own treatments. At last, China and India are two very promising markets given that their health care sector is growing at the same pace as their economy. In addition to considering these trends, Galactic commits to help its customers answer the pharmaceutical industry's needs for safe, sustainable and cost-effective products.



II. APPLICATIONS

INFUSION SOLUTIONS



Galaflo™ SL Pharma C, Galactic's pharmaceutical grade sodium lactate, is used in infusion therapy to support the healing process of patients by rebalancing the body fluids and supplying them with mineral salts that may be lost for various reasons. The product is used in the lactated form of several crystalloid solutions which are closely isotonic with blood such as Ringer's and Hartmann's solutions which slightly differ from

each other by their ionic concentrations. Darrow's solution, also called saline injection, contains **Galaflo™ SL Pharma C** together with potassium salts. It is generally used in fluid therapy to overcome potassium deficiency.

DIALYSIS SOLUTIONS

Galaflo™ SL Pharma C is also used to treat patients suffering from renal failure either during the renal dialysis at the hospital or within the framework of continuous ambulatory peritoneal dialysis (CAPD). During CAPD, a fluid, called dialysate, containing high-purity sodium lactate is introduced directly into the abdomen via a catheter which helps drain the impurities towards the peritoneum that acts as a filter.¹ In these applications, sodium lactate is favoured over sodium acetate because the latter leads to unpleasant side effects such as headaches.

¹'Continuous Ambulatory Peritoneal Dialysis', 2014, <http://www.drugs.com/cg/continuous-ambulatory-peritoneal-dialysis.html>.

ELECTROLYTES AND MINERAL SOLUTIONS

Various disease patterns induce a lack and or an imbalance of electrolytes. Galactic's mineral lactates display high solubility and excellent bioavailability which makes them perfectly suited for all kinds of formulations in many different forms such as powders, chewable and effervescent tablets, lozenges, capsules, gels and liquids.

Post-menopausal women and elderly people for instance take supplements containing **Galaxium™** (calcium lactate) to slow down the degeneration of bone mass and osteoporosis. **Galanium™ ferrous lactate** is used to remedy iron deficiencies among pregnant women as pregnancy is a period during which the needs for iron are great. Similarly, **Galanium™ ferrous lactate** is administered in serious cases of nutritional anaemia characterized by a sharp decrease in the concentration of haemoglobin in the blood which leads to a poor oxygenation of the tissues and a reduction of the resistance to infections.

TREATMENTS FOR COLDS, RHINITIS AND SINUSITIS

When people experience the symptoms of a cold, many of them are used to take over-the-counter medications such as analgesics (aspirin, codeine, etc.), antihistamines, decongestants or various cough syrups. These remedies only suppress or reduce the symptoms but do not really attack the root cause of the disease. The use of divalent zinc, such as in **Galanium™ zinc lactate**, has now become well established as it is proven that it is very effective in reducing the symptoms and/or the duration of a common cold, rhinitis and sinusitis when it is delivered in the vicinity of the pharyngeal mucosa with the help of lozenges for instance.



GASTRIC ANTACIDS

Antacids are used to neutralize the acidity in the stomach. In addition to the reduction of gastric acidity, antacids also alter the profile of prostaglandins produced by the gastro-duodenal mucosa and this may promote mucosal healing, according to some studies.² **Galanium™ aluminium lactate** is used for making magnesium aluminium chlorohydroxy lactates which are regarded as effective remedies for stomach pain (hyperacidity, ulcer, etc.) thanks to their buffering properties.

² G. Preclik, E.F. Stange, K. Gerber, G. Fetzer, H. Horn, A. Schneider, H. Ditschuneit, 'Effect of Antacid Treatment on Endogenous Prostaglandin Synthesis in Human Antral and Duodenal Mucosa' in *Digestive Diseases and Sciences*, vol. 34, 1989, pp. 1860–4.

DERMATOLOGICAL PREPARATIONS

Galanium™ aluminium lactate is a key ingredient in the manufacture of aluminium propionate and aluminium dipropionate compounds, themselves used for the treatment of nappy rash in newborns and in case of irritation, nettle rash (urticaria) or inflammatory skin disorders among adults.

OINTMENTS AND POWDERS

In some ointments, such as anti-inflammatories, **Galaxium™** (calcium lactate) and **Galacid™** (lactic acid) are used as excipients. These products, as well as lactic acid derivatives of the **Galaflow™** range like sodium lactate and ammonium lactate, are used as pH regulators or buffering agents but also to maintain a good hydration level of the skin thanks to their moisturizing properties.



ORAL AND DENTAL CARE

Galanium™ aluminium lactate and **Galanium™ zinc lactate** have the property to be excellent oral and dental disinfectants. They are particularly recommended for their action on the oral mucosa in gingival treatments and for the prevention of caries. **Galanium™ zinc lactate** is also a perfect solution to eliminate halitosis. Halitosis (commonly known as bad breath) is a condition affecting many people and one of the most usual reasons why people go look for a dentist's advice. The main origin of halitosis is related to the volatile sulphur compounds (VSC) produced by the different bacterial colonies found on the tongue and in the gingival crevices. Zinc lactate is a very effective solution to neutralize the VSC and an excellent ingredient for mouthwashes and toothpastes.



The table below summarizes Galactic's main products available for the pharmaceutical industry:

	Galaflow™ sodium lactate Pharma C 50	Galaflow™ sodium lactate Pharma C 60	Galaxium™ (calcium lactate)	Galanium™ ferrous lactate	Galanium™ zinc lactate	Galanium™ aluminium lactate	Galacid™ lactic acid	Galaflow™ ammonium lactate
Infusion solutions	✓	✓						
Dialysis solutions	✓	✓						
Electrolytes and mineral solutions			✓	✓				
Treatments for colds, rhinitis and sinusitis					✓			
Gastric antacids						✓		
Dermatological preparations		✓				✓	✓	✓
Ointments and powders	✓	✓	✓				✓	✓
Oral and dental care			✓		✓	✓		

People at Galactic produce all these standard products but also love to be challenged and stay at their customer's disposal to develop new products and molecules.

III. CERTIFICATIONS



Our products comply with the latest editions of the European and United States Pharmacopoeias or their equivalents. In order to meet the requirements for critical applications, Galactic has invested in a brand-new production line operating according to the Good Manufacturing Practices (GMP) guidelines in its 4,000 m² state-of-the-art biotechnological facilities located in an innovative pharmaceutical and medical environment in Brussels, the heart of Europe. A new line of products, **Galaflow™ SL Pharma C**, is now available. It fulfils the requirements of the US-Drug Master file (US-DMF) and the Certification of Suitability to monographs of the European Pharmacopoeia (CEP).

Since 1994 Galactic has become one of the world leaders in biotechnology serving the food, feed, personal & health care, and industrial markets. Based on its valuable experience in the fermentation of lactic acid and in the production of its derivatives, Galactic continuously develops sustainable, innovative and health-friendly solutions in the field of food safety, nutrition and green chemistry. With its headquarters and an Innovation Campus in Belgium, production facilities and front-labs in the United States (Milwaukee), China (Bengbu) and Europe (Escanaffles, Brussels), and additional sales offices in Germany (Düsseldorf), Italy (Milan), Japan (Tokyo) and Brazil (Curitiba), Galactic employs about 370 people worldwide and is active in more than 65 countries.



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