VIVAPHARM® Pectins

The All-Natural Multi-Use Stabilizer

Gel Forming
Thickening
Stabilizing

JRS PHARMA *The Global Excipient Maker* JRS FAMILY A Member of the JRS Group

VIVAPHARM® Pectins

Introduction

Pectins: The Natural Stabilizer

Pectins have a long tradition as a gel former in jams. Since commercial production began in the early twentieth century, Pectin use has spread into a wide variety of applications where texturizing, stabilizing, thickening and gel forming is needed.

Pectins are versatile biopolymers which can be found in the cell walls of all vascular plants. As a natural ingredient, Pectins provide a positive, clean image.

Derived from the peels of citrus fruits (lemons, limes, and oranges) used for essential oils and fruit juices, **VIVAPHARM® Pectins** turn a by-product into a useful raw material.

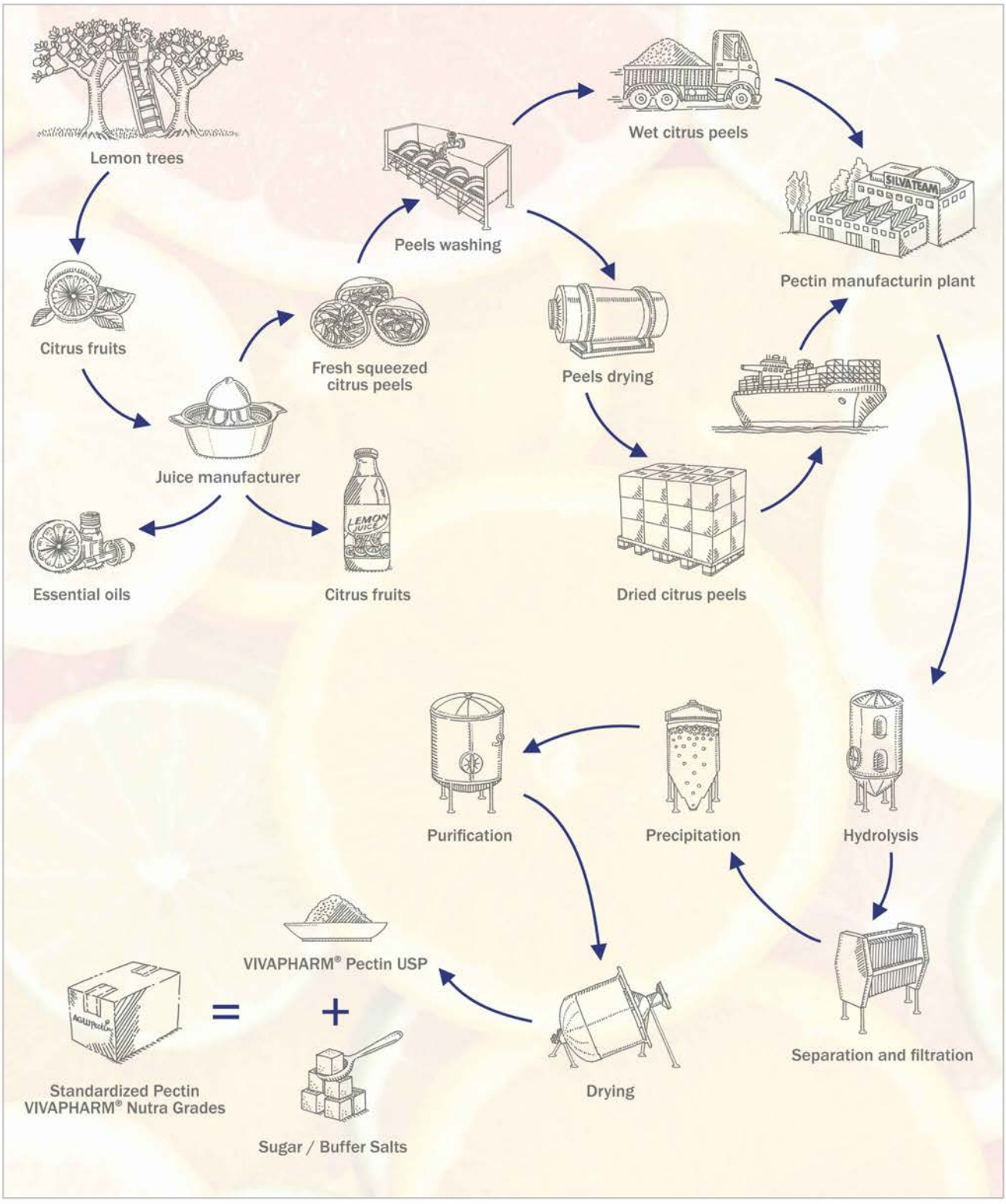
Manufacturing Excellence

With **VIVAPHARM® Pectins**, JRS PHARMA offers a full range of high quality citrus Pectins including pure Pectin for pharmaceutical applications, as well as standardized and buffered Pectins for nutraceutical applications. During standardization, defined quantities of a carrier - usually sucrose or dextrose – and/or buffer salts are mixed with the Pectin. This process ensures consistent parameters in terms of gel strength, viscosity and mouthfeel.

VIVAPHARM® Pectins are produced in JRS Silvateam Ingredients' state-of-the-art facility, located in Rende, Italy. With our flexible, customer-oriented manufacturing system, tailor-made pectin solutions can be developed to meet individual customer needs. Additionally, we offer a high level of customer support backed by extensive application expertise and in-house research capabilities. As JRS Silvateam Ingredients uses locally sourced wet peels, as well as imported dry peels, our customers benefit from a high supply security.

JRS Silvateam Ingredients is a joint venture between Italian Silvateam S.p.a. and German JRS group, two international family owned companies.

The Pectin Production Cycle



VIVAPHARM® Pectins

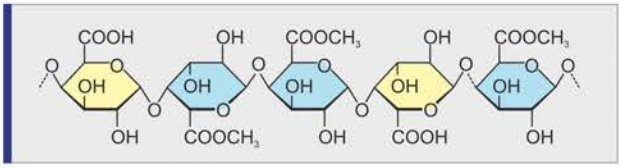
Product Overview

	Grade	Ingredients	Description
PHARMA	**VIVAPHARM® Pectin USP**	Pectin (USP)	- Pure citrus pectin - Added to medical products as dietary fiber
NUTRA	**VIVAPHARM® Pectin Nutra 150**	Pectin (E440i, FCC), Dextrose	- Classic unbuffered pectin for nutraceutical confections - Slow set gelling agent
NUTRA	**VIVAPHARM® Pectin Nutra SB**	Pectin (E440i, FCC), Dextrose, Potassium Sodium Tartrate (E337, FCC), Sodium Polyphosphate (E452i, FCC), Silicon Dioxide (E551, FCC)	- Convenient grade for nutraceutical confections - Buffer salts already included
NUTRA	**VIVAPHARM® Pectin Nutra GR**	Pectin (E440i, FCC), Potassium Sodium Tartrate (E337, FCC), Trisodium Citrate (E331iii, FCC), Dextrose	- Convenient grade for nutraceutical confections - More chewy, less brittle texture - Ideal for gelatin replacement
NUTRA	**VIVAPHARM® Pectin Nutra HS**	Pectin (E440i), Sodium citrate (E331iii), Sucrose	- Convenient grade for nutraceutical confections - Ideal in combination with gelatin to decrease the melting point

For customized solutions as well as low methoxyl conventional and amidated pectins please do not hesitate to contact ExcipientsService@JRSPharma.de.

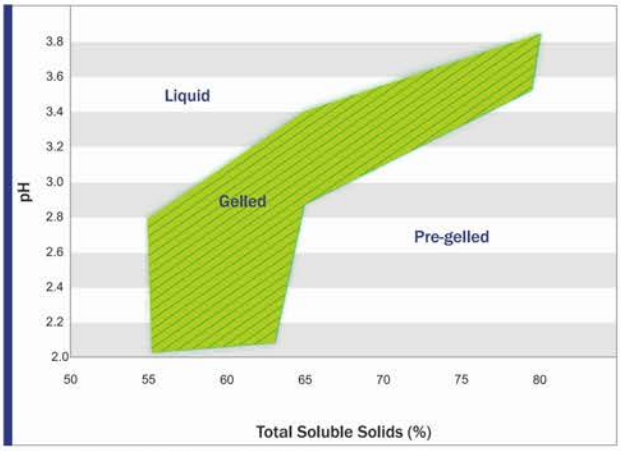
Characteristics of **VIVAPHARM® Pectins**

From a chemical perspective, pectin is a macro molecular compound. Pectins consist of the partial methyl esters of polygalacturonic acid and their salts. Commercial pectins are classified according to the degree of methoxylation as High Methoxyl (HM) Pectin and Low Methoxyl (LM) Pectin. The degree of methoxylation is expressed as a percentage of esterified galacturonic acid units to total galacturonic acid units in the molecule of pectin. Further, amidated pectins can be produced by partial amidation of the unesterified carboxyl groups.



Pic 1 Chain of HM Pectin

The gel strength of HM Pectins depends on various factors such as pH value, soluble solids content, temperature and type of pectin.



Pic 2 Gelling Conditions of HM Pectin

JRS PHARMA's standard portfolio of **VIVAPHARM® Pectins** consists of HM Pectin, whereas LM Pectin (conventional and amidated) are also available upon request.

VIVAPHARM® Pectins form a proper gel under specific conditions: pH between 2.0 - 3.8 and total soluble solids content between 55 - 80 %.

VIVAPHARM® Pectins: Additional Information

Application

VIVAPHARM® Pectins must be completely dissolved to maximize functionality. It is recommended to dissolve pectin with a high-speed mixer in hot water before applying the pectin solution to the product. Any lumps formed during the preparation of the solution leads to the loss of gel power because the pectin lumps are not active.

Two key parameters in the production of confectionery products are setting time and setting temperature. These parameters indicate the ideal temperature as well as the time which is needed for the product to form a proper gel. Both parameters are influenced by a variety of factors which are shown in the following overview and need to be considered when creating a new formulation.

Grade	Gel Strength	Gel Properties
VIVAPHARM® Pectin USP	●●●●●	Cuttable and shiny, slightly coarse surface
VIVAPHARM® Pectin Nutra 150	●●●●○	Cuttable and shiny surface
VIVAPHARM® Pectin Nutra SB	●●●○○	Soft, cuttable and shiny surface
VIVAPHARM® Pectin Nutra GR	●●○○○	Soft and chewy, cuttable and shiny surface

Tab. 1 Gelling Properties of **VIVAPHARM® Pectins**

Setting Temperature and Setting Time are influenced by:

- Degree of Methoxylation of the pectin
- pH-value
- Total soluble solids content
- Type of sugar
- Concentration of buffer salts
- Type of buffer salts

Product Benefits

- Sustainable, naturally sourced product with positive customer perception
- Highly soluble dietary fiber, adding nutritional value
- Vegan alternative to gelatin for increased consumer compliance
- Flavor enhancer, providing ta pleasant mouthfeel
- Increases heat stability of nutritional gummies when used instead of or in combination with gelatin for improved shelf stability
- **VIVAPHARM® Pectins** already gel effectively at low dosage levels and provide a clear gel

Regulatory Information

- Complies with FCC monograph and E440(i)
- GRAS listed
- No daily intake limit
- Pure Pectin compliant with USP available
- Halal and Kosher certified
- Free of allergens, Non GMO, BSE/TSE free, free of irradiation and fumigation
- ISO 9001 and ISO 22000 certified

Packaging, Samples and Storage

- Samples available in 150 g, 250 g and 500 g sizes
- Standard packaging: 25 kg paper bags with food grade polyethylene liner
- Available on 500 kg industrial pallets