**Lactobacillus Sporogenes**

**Description**

*Lactobacillus sporogenes* is a gram-positive, spore-forming, lactic-acid producing bacillus. It was originally isolated and described in 1933. The organism requires a complex mixture of organic substrates for growth, including fermentable carbohydrates and peptides.

**Pharmacokinetics**

Subsequent to oral administration, *L. sporogenes* passes through the stomach in its spore form and upon arrival in the duodenum, germinates and multiplies rapidly.\(^1\)

Estimates suggest the average duration of time between oral dosing and germination is four hours.\(^1\) After germination, *L. sporogenes* is metabolically active in the intestines, producing lactic acid.

*L. sporogenes* is considered a semi-resident, indicating it takes up only a temporary residence in the human intestines. Spores of *L. sporogenes* are excreted slowly via the feces for approximately seven days after discontinuation of administration.\(^1\)
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**Mechanisms of Action**

Despite the transient nature of this organism in the digestive tract, the changes this lactic acid bacillus produces shift the environment in support of a complex gastrointestinal flora.\(^1\),\(^2\)

The mechanism of action is presumed to be a result of improving gastrointestinal ecology by replenishing the quantity of desirable obligate microorganisms and antagonizing pathogenic microbes.\(^2\),\(^3\)

Two isomeric forms of lactic acid can be produced by lactic acid-producing bacteria – dextrorotatory (D (-)) lactic acid and levorotatory (L(+)) lactic acid. L(+) lactic acid is completely metabolized in the body; however, D(-) lactic acid is not completely metabolized, resulting in a degree of metabolic acidosis. *L. sporogenes* produces only L(+) lactic acid.\(^1\)

*L. sporogenes* is assumed to produce bacteriocins\(^2\) and short chain fatty acids. As the organism grows, it assimilates and incorporates cholesterol into its cellular structure.\(^1\)

*L. sporogenes* possesses significant \(\beta\)-galactosidase (lactase) activity *in vitro*.\(^4\)

**Clinical Indications**

**Lipid Disorders**

Administration of *L sporogenes* to rabbits resulted in a 90-percent inhibition in the rise of serum cholesterol secondary to feeding of high cholesterol diets.\(^3\)

Oral *L sporogenes* supplementation (360 million spores/day) decreased total serum cholesterol from an average of 330 mg/dL to 226 mg/dL in 17 subjects with type II hyperlipidemia over a three-month time interval. HDL-cholesterol increased slightly. No changes in serum triglyceride levels were observed.\(^6\)

**Digestive Disorders**

In laboratory animals with bacterial dysbiosis, *L sporogenes* supplementation inhibits growth of pathogenic microorganisms and results in renewal of desirable obligate gastrointestinal organisms to normal levels.\(^3\) Reports suggest that supplementation produces a rapid resolution of acute gastrointestinal infection induced by pathogenic bacteria in calves.\(^3\)

It has been reported that the efficacy of treatment in patients with bacterial dysbiosis receiving *L sporogenes* was 20-30 percent higher than traditional probiotics such as *Lactobacillus acidophilus* of Bifidobacteria.\(^2\)

Seventy percent of individuals suffering from chronic constipation treated with 300-750 million spores per day of *L sporogenes* for two to 10 days experienced an amelioration of abdominal distention and a normalization of stools.\(^7\)

Reports suggest a benefit in neonatal diarrhea.\(^7\)

**Aphthous Stomatitis**

Reports suggest efficacy in the treatment of aphthous stomatitis with resolution occurring within two to three days.\(^8\),\(^9\)

**Vaginitis**

Vaginal administration of *L. sporogenes* was investigated in non-specific vaginitis. Subjects with Trichomonas or Candida vaginitis were excluded from the study. Complete relief of pruritis and discharge was reported by 93 percent of subjects. Postmenopausal subjects had a slower response to therapy.\(^10\)

**Toxicity and Side Effects**

Acute toxicity studies in animals have been conducted with doses as high as 50 g/kg for seven days. No abnormalities, either during supplementation or in the period after withdrawal of the supplement, were observed. Chronic supplementation of doses as high as 5 g/kg for 15 months in animals results in no observed toxicity. In humans, adverse reactions following supplementation have not been reported.

**Dosage**

A reasonable dose is 100 mg two to three times daily. Each 100 mg contains approximately 1.5 billion colony-forming units.
References


