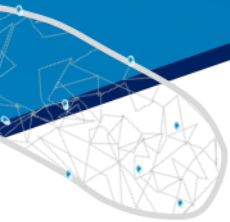




glac

Biotech Co., Ltd.



TSF331

Lactobacillus fermentum



Glac Biotech Co., Ltd.
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Email : michael.hsiao@glac.com.tw

Freeze-Dried Probiotic Ingredient



- ✓ Strain name : **Lactobacillus fermentum TSF331**
- ✓ Specification : 3.0×10^{11} CFU/g
- ✓ Packing size : 1kg a bag with nitrogen filling and vacuum packing.
- ✓ Storage : $\leq 4^{\circ}\text{C}$, 24 months
- ✓ Strain Origin : Isolated from healthy human intestines with no microbial domestication and mutation process.
- ✓ **Application** : ✓Reduce uric acid level✓Blood glucose control✓Lipids regulation✓Liver protection✓Anti-oxidant✓inflammation reduction✓Gut health
- ✓ Production process: Through fermentation, centrifuging, freeze-drying and packaging

Patent

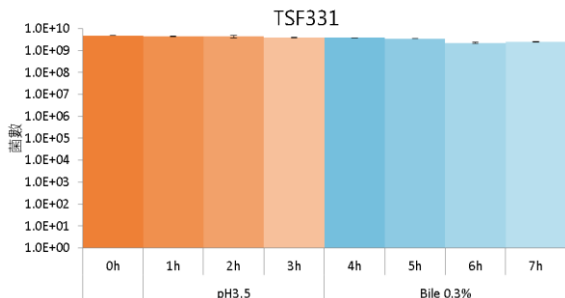
Country	Obtained/ In Progress	Patent No.	Title
CN	In Progress	201910004073.0	Food composition and pharmaceutical composition of lactic acid bacteria strains for reducing blood uric acid concentration
CN	In Progress	16/298,233	Food composition and pharmaceutical composition with strains of lactic acid bacteria for reducing blood uric acid concentration
CN	In Progress	201910110144.5	Food composition and pharmaceutical composition containing lactic acid bacteria strain for protecting liver
US	In Progress	16/389,297	Hepatoprotection food composition and pharmaceutical composition with strains of lactic acid bacteria

Published Paper

Year	Academy/ Journal	Title	Source
2018	Academy	Characterization of purine degrading lactic acid bacteria and evaluation of the serum uric acid lowering effect in hyperuricemic rats	2018. ISAPP. No.7864.
2019	Academy	The role of Lactobacillus species in the prevention of alcohol-induced liver injuries	2019. ISAPP.
2019	Journal	Bacteriostatic abilities of viable and heat-killed lactic acid bacteria against group B Streptococcus	Basic Clin Pharmacol Toxicol. 12-13.
2021	Journal	Lactobacillus spp. reduces ethanol-induced liver oxidative stress and inflammation in a mouse model of alcoholic steatohepatitis	Experimental and therapeutic medicine 21: 188, 2021.
2021	Journal	<i>Lactobacillus reuteri</i> TSR332 and <i>Lactobacillus fermentum</i> TSF331 stabilize serum uric acid levels and prevent hyperuricemia in rats	PeerJ 9:e11209

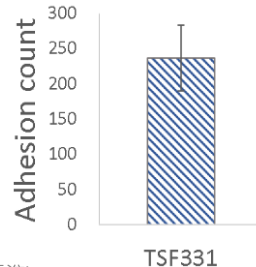
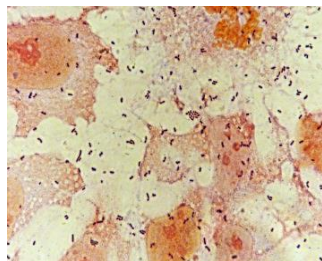
High Gastric Acid and Bile Tolerance

TSF331 remained high bioavailability in the simulated environment with Gastric Acid and Bile for 7 hours



Strong Colonization on Caco-2 Intestine Cells

TSF331 highly adheres to Caco-2 intestine cells

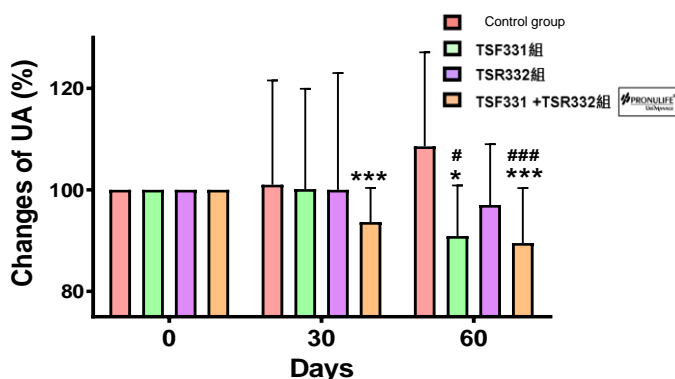


(>100為強吸附判斷標準)

Uric acid level reduction

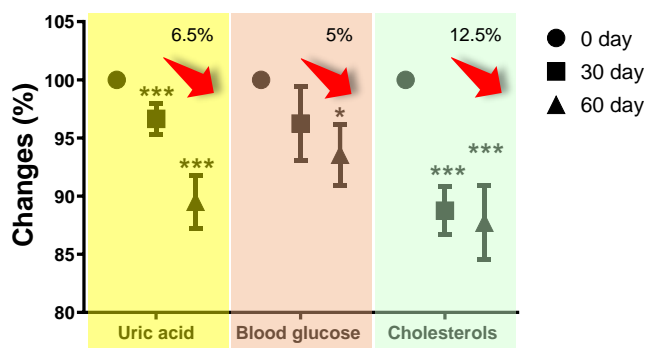
Human trial : 53 subjects with high uric acid level taking probiotics 3 times per day for 60 days

TSF331 can effectively reduce uric acid level



Blood glucose and lipids regulation

Human trial : 25 subjects with high uric acid level taking probiotics 3 times per day.

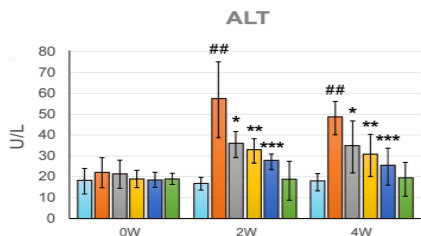


Liver protection

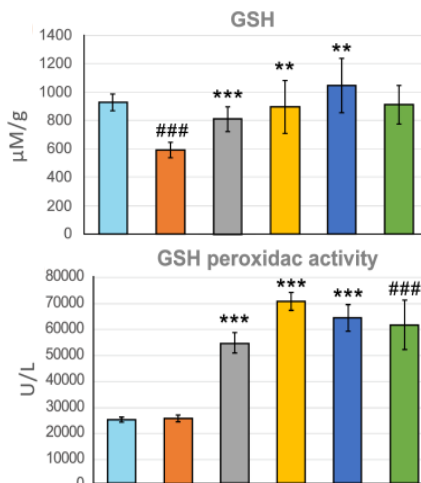
Animal test : Used alcohol induced mice for 28 days

Control Alcohol Alcohol+TSP05 Alcohol+TSF331+TSR332 Alcohol+Mix-LAB PL0301 Mix+LAB PL0301

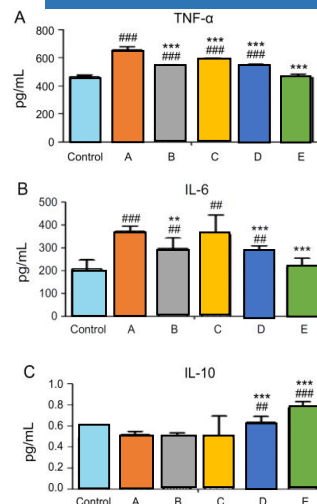
Decreasing liver damage



Increasing anti-oxidant capability

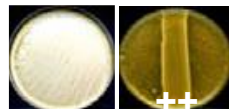


Reducing inflammation



Gut health

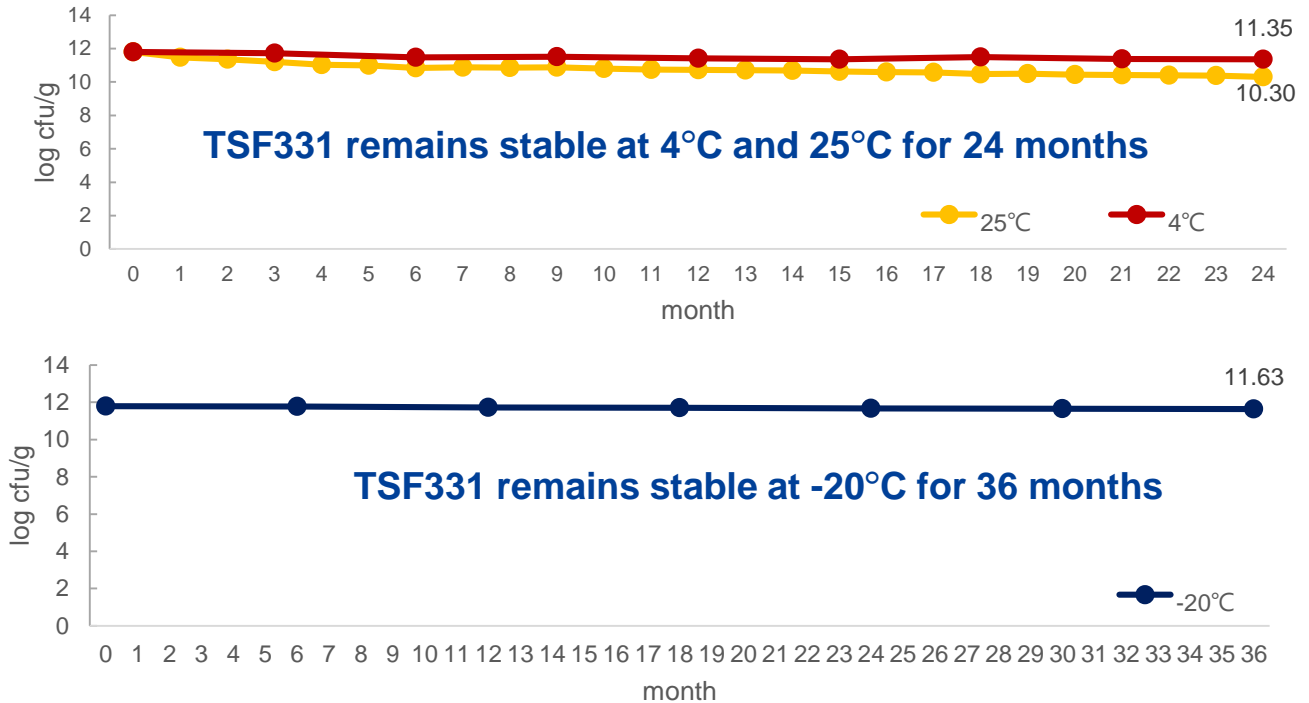
Control TSF331



(+ : Strength of inhibitory effect)

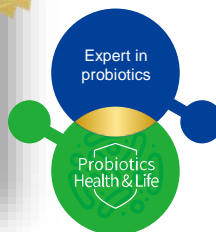
Group B Streptococcus (GBS)

Long Term Stability

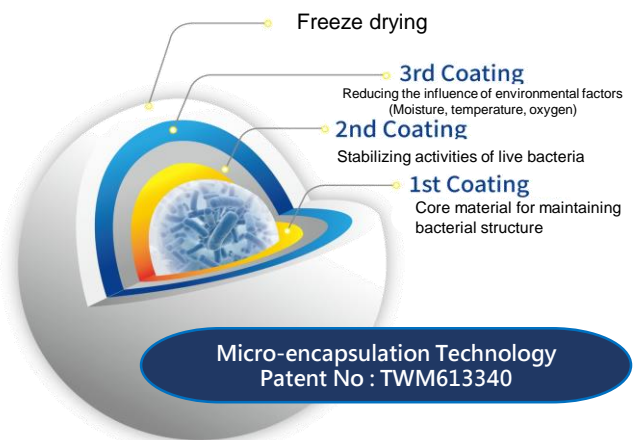


Safety Test

**Passed safety evaluation
by National Medical
Products Administration**



Micro-Encapsulation Technology



- ✓ **EFSA QPS approved Probiotic Strain**
- ✓ **Approved by China SFDA for food supplement.**
- ✓ **Approved by Taiwan FDA for food supplement.**