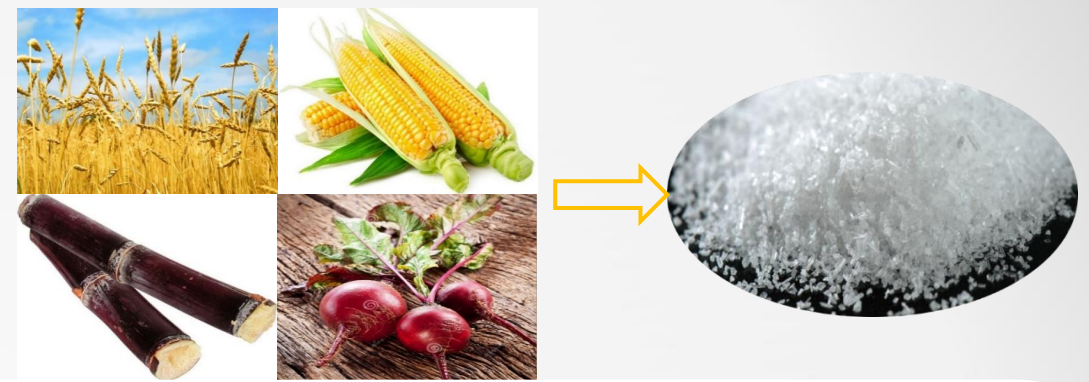


L-ARABINOSE

Healtang Biotech Co.,Ltd.

L-arabinose Introduction



L-Arabinose is a ubiquitous sugar that occurs in common foods both as a monosaccharide and as a component of polysaccharides. Normally natural existed in the hemi-cellulose part of Corn Cob, beet and wood etc .

- Crystalline powder, no odor
- Soluble in water, slightly soluble in ethanol, Insoluble in ether, methanol and acetone, The solubility in 25°C pure water is about 814.24g/kg·H₂O, Fat soluble same as sucrose
- Melting point 154~160°C
- Sweetness is 50% to 60% of sucrose
- As reducing sugar, maillard reaction occurs in the presence of amino compounds such as amino acids and proteins
- As a monosaccharide, caramelization occurs when heated to temperatures above the melting point in the absence of water or in high concentrations
- Not absorbed by the human body, is a recognized low energy sweetener

Reduced insulin response

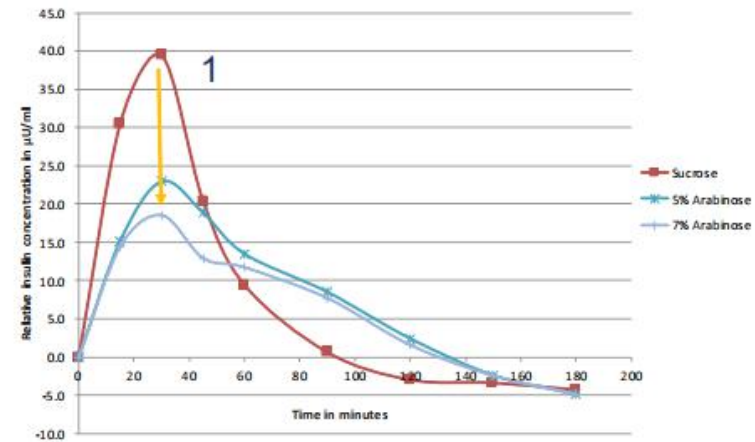
胰岛素反应：

胰岛素面积减少导致：减少脂肪生成，预防糖尿病和减少二型糖尿病的机会

--牛津布鲁克斯大学

报

OB Insulin profile: Arabinose



Explanation of advantages of Arabinose:

1. Reduction of insulin peak leads to
 - less fat formation.
 - Less chance for development of prediabetes and Diabetes II.

Uses of arabinose reported by the Flavor & Extract Manufacturers Association (FEMA) are listed in Table 3-1. FEMA reported individual intake of arabinose to be 0.03 mg/kg/day and a possible average daily intake (PADI) to be 38.6 mg based on the known uses.

Table 3-1. Uses of Arabinose Reported by FEMA		
Food Category	Usual concentration (wt %)	Maximum concentration (wt %)
Baked goods	0.015	0.045
Condiments, relishes	0.0075	0.045
Jams, jellies	0.015	0.045
Nonalcoholic beverages	0.015	0.045
Soft candy	0.015	0.045
Source: Burdock, 2009.		

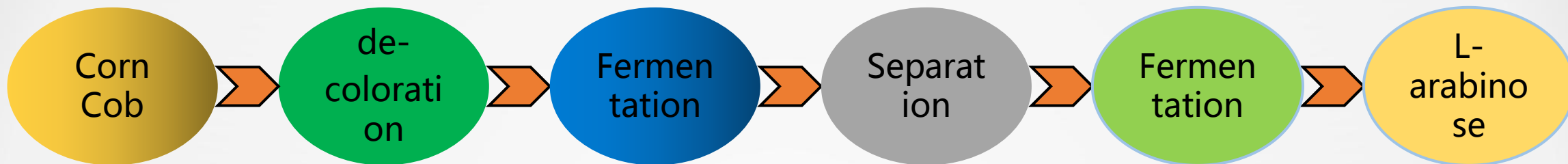
在上述产品中含有的L-阿拉伯糖的量

Arabinose is also used as an ingredient in dietary supplements. Pharmachem Laboratories, Inc. (Pharmachem) produces a supplement called Prenulin that contains L-arabinose and is intended to function as a "Sugar Blocker."¹ The Pharmachem L-arabinose is derived from corn and, according to the website, the substance is GRAS.

报

摘自：L-arabinose GRAS

L-arabinose Production



Since 2008, Healtang L-arabinose was prepared by the advanced biological fermentation method, purity $\geq 99.0\%$, It is less polluting to the environment



L-arabinose legality



Approved as Novel Food



As GRAS (Generally Recognized as Safe) product added into all kind of Food



As FOSHU used in the products for customers caring about the blood sugar

卫生部关于批准嗜酸乳杆菌等7种新资源食品的公告（卫生部公告2008年第12号）

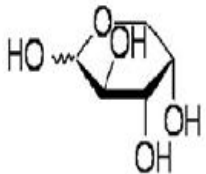
根据《中华人民共和国食品卫生法》和《新资源食品管理办法》的规定，批准嗜酸乳杆菌、低聚木糖、透明质酸钠、叶黄素酯、**L-阿拉伯糖**、短梗五加、库拉索芦荟凝胶为新资源食品。上述**7**种新资源食品用于食品生产加工时，应符合有关法律、法规、标准规定。

特此公告。

附件：**7种新资源食品目录.doc**

二〇〇八年五月二十六日

CHINA-Novel Food

中文名称	L-阿拉伯糖	
英文名称	L-Arabinose	
产品基本信息	<p>来源：玉米芯、玉米皮等禾本科植物纤维</p> <p>结构式：</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\begin{array}{c} \text{H}-\text{C}=\text{O} \\ \\ \text{H}-\text{C}-\text{OH} \\ \\ \text{HO}-\text{C}-\text{H} \\ \\ \text{HO}-\text{C}-\text{H} \\ \\ \text{CH}_2\text{OH} \end{array}$ <p>链状结构</p> </div> <div style="text-align: center;">  <p>环状结构</p> </div> </div> <p>分子式：C₅H₁₀O₅</p> <p>分子量：150.13</p>	
生产工艺简述	以玉米芯、玉米皮等禾本科植物纤维为原料经稀酸水解、脱色、脱酸、生物发酵、分离净化、结晶、干燥得到。	
使用范围	各类食品，但不包括婴幼儿食品	
产品质量规格	性状	白色结晶粉末
	L-阿拉伯糖含量	≥99.0%
	水分	≤1.0%
	灰分	≤0.1%
	熔点	154-158℃
	比旋光度[α] ²⁰ _D (C=5, H ₂ O)	+100°~+104°

行政许可终止审查通知书

卫食新终字[2015]第0002号

济南圣泉唐和唐生物科技有限公司:

你单位提出的关于L-阿拉伯糖(卫食新申字(2013)第0035号)的行政许可申请,根据《食品安全法》和《新食品原料安全性审查管理办法》,国家卫生和计划生育委员会根据新食品原料专家评审委员会技术评审结论,作出“终止审查”决定。

理由为:

本产品是以玉米芯、玉米皮为原料,经稀酸水解、酿酒酵母发酵、分离净化、结晶、干燥等工艺制成,与已批准公告的L-阿拉伯糖(原卫生部2008年12号公告)具有实质等同性。作为食品原料使用时,应按照已公告的L-阿拉伯糖有关内容执行,卫生安全指标按照我国相关标准执行。



L-ARABINOSE

CAS Reg. No. (or other ID):	5328-37-0
Substance:	L-ARABINOSE
Other Names:	◆ ARABINOSE, L- ◆ PECTIN SUGAR ◆ PECTINOSE ◆ L-ARABINOSE ◆ ARABINOSE, L-(+)-
Used for (Technical Effect):	FLAVOR ENHANCER, FLAVORING AGENT OR ADJUVANT
FEMA No.*:	3255
FEMA GRAS Publication No(s).*:	5

美国-FDA-Substances Added to Food (formerly EAFUS)数据库

Row	Saved	Status	Study Title	Conditions	Interventions	Locations
1	<input type="checkbox"/>	Completed	Effects of a Dietary Supplement Containing L-Arabinose and Trivalent Patented Food-source of Chromium on Blood Glucose and Insulin	<ul style="list-style-type: none"> Pre-diabetes 	<ul style="list-style-type: none"> Dietary Supplement: L-Arabinose and Chromium Dietary Supplement: Sucrose without dietary Supplement 	<ul style="list-style-type: none"> Integrative Health Technologies San Antonio, Texas, United States
			含l-阿拉伯糖和三价铬的膳食补充剂对血糖和胰岛素的影响			
2	<input type="checkbox"/>	Completed	The Effects of L-Arabinose and D-xylose on Intestinal Sucrase Activity in Man	<ul style="list-style-type: none"> Insulin Resistance 	<ul style="list-style-type: none"> Dietary Supplement: Placebo comparator: 0% pentose Dietary Supplement: Active comparator: 4% D-xylose Dietary Supplement: Active comparator: 8% D-xylose Dietary Supplement: Active comparator: 8% L-arabinose 	<ul style="list-style-type: none"> Institute of Human Nutrition, The Royal Veterinary and Agricultural University Frederiksberg, Denmark
			l-阿拉伯糖和d-木糖对人肠道蔗糖酶活性的影响			
3	<input type="checkbox"/>	Completed	The Effects of L-arabinose on Intestinal Sucrase Activity in Man	<ul style="list-style-type: none"> Blood Glucose 	<ul style="list-style-type: none"> Drug: L-arabinose 	<ul style="list-style-type: none"> Institute of Human Nutrition, The Royal Veterinary and Agricultural University Frederiksberg, Denmark
			l-阿拉伯糖对人肠道蔗糖酶活性的影响			
4	<input type="checkbox"/>	Completed	The Effects of L-arabinose in a Meal in Healthy Men	<ul style="list-style-type: none"> Glucose Metabolism 	<ul style="list-style-type: none"> Dietary Supplement: L-arabinose - effect on glucose metabolism 	
			l-阿拉伯糖对健康男性饮食的影响			
5	<input type="checkbox"/>	Completed	Reduction of the Dietary Glycemic Index (GI) by L-Arabinose and Indigestible Dextrin	<ul style="list-style-type: none"> Healthy 	<ul style="list-style-type: none"> Dietary Supplement: L-arabinose and indigestible dextrin Dietary Supplement: Placebo 	<ul style="list-style-type: none"> Hiroshima University Hiroshima, Japan
			l-阿拉伯糖和难消化糊精降低饮食血糖指数(GI)			
6	<input type="checkbox"/>	Completed	Effects of the Combination of L-Arabinose and Indigestible Dextrin on Obesity	<ul style="list-style-type: none"> Obesity 	<ul style="list-style-type: none"> Dietary Supplement: Oolong tea containing L-arabinose and indigestible dextrin Dietary Supplement: Oolong tea (Placebo) 	<ul style="list-style-type: none"> Hiroshima University Hiroshima, Japan
			l-阿拉伯糖与难消化糊精联合应用对肥胖的影响			

Recently Published GRAS Notices and FDA Letters

GRN No.	Substance	GRAS Notice	FDA Letter
782	L-arabinose	GRN 782 (in PDF 9.02 MB)	FDA has no questions (in PDF 47 kB)

7 Use and Manufacturing



7.1 Uses



EPA CPDat Chemical and Product Categories

3 items

 Download

SORT BY Category

Category	Category Description	Categorization Type
Drug	Drug product, or related to the manufacturing of drugs; modified by veterinary, animal, or pet if indicated by source	CPCat Cassette
Food_additive	Includes spices, extracts, colorings, flavors, etc added to food for human consumption	CPCat Cassette
Human_metabolite	Human metabolites	CPCat Cassette

美国-国家医学图书馆 (U.S. National Library of Medicine)

Row	Saved	Status	Study Title	Conditions	Interventions	Locations
1	<input type="checkbox"/>	Completed	The Effects of L-arabinose in a Meal in Healthy Men	<ul style="list-style-type: none"> Glucose Metabolism 	<ul style="list-style-type: none"> Dietary Supplement: L-arabinose - effect on glucose metabolism 	
2	<input type="checkbox"/>	Completed	Effects of a Dietary Supplement Containing L-Arabinose and Trivalent Patented Food-source of Chromium on Blood Glucose and Insulin	<ul style="list-style-type: none"> Pre-diabetes 	<ul style="list-style-type: none"> Dietary Supplement: L-Arabinose and Chromium Dietary Supplement: Sucrose without dietary Supplement 	<ul style="list-style-type: none"> Integrative Health Technologies San Antonio, Texas, United States
3	<input type="checkbox"/>	Completed	The Effects of L-arabinose on Intestinal Sucrase Activity in Man	<ul style="list-style-type: none"> Blood Glucose 	<ul style="list-style-type: none"> Drug: L-arabinose 	<ul style="list-style-type: none"> Institute of Human Nutrition, The Royal Veterinary and Agricultural University Frederiksberg, Denmark
4	<input type="checkbox"/>	Completed	Reduction of the Dietary Glycemic Index (GI) by L-Arabinose and Indigestible Dextrin	<ul style="list-style-type: none"> Healthy 	<ul style="list-style-type: none"> Dietary Supplement: L-arabinose and indigestible dextrin Dietary Supplement: Placebo 	<ul style="list-style-type: none"> Hiroshima University Hiroshima, Japan
5	<input type="checkbox"/>	Completed	The Effects of L-Arabinose and D-xylose on Intestinal Sucrase Activity in Man	<ul style="list-style-type: none"> Insulin Resistance 	<ul style="list-style-type: none"> Dietary Supplement: Placebo comparator: 0% pentose Dietary Supplement: Active comparator: 4% D-xylose Dietary Supplement: Active comparator: 8% D-xylose Dietary Supplement: Active 	<ul style="list-style-type: none"> Institute of Human Nutrition, The Royal Veterinary and Agricultural University Frederiksberg, Denmark

美国-国家医学图书馆 (U.S. National Library of Medicine) -L-arabinose clinicals

特定保健用食品 商品群別の「関与する成分」 一覧表

9	血糖値が気になり始めた方の食品	グアバ葉ポリフェノール
		小麦アルブミン
		難消化性デキストリン
		難消化性デキストリン（食物繊維）
		豆鼓エキス
		L-アラビノース

Japan-特定保健用食品成分目录-人们关注血糖值的食品

2019年07月18日保健食品批件待领取信息-已批准



2019年07月18日 发布

序号	受理编号	产品名称	申报单位
1	国食健再G20110314	多种维生素矿物质片	
2	国食健再G20150218	L-阿拉伯糖粉	
3	国食健转G20140101	人参黄芪茯苓胶囊	

L-阿拉伯糖粉

本品是以L-阿拉伯糖为主要原料制成的保健食品，经动物功能和人体试食试验证明，具有辅助降血糖、减肥的保健功能。

- 【品名】 L-阿拉伯糖粉
- 【主要原料】 L-阿拉伯糖
- 【标志性成分及含量】 每100g含：L-阿拉伯糖99.0g
- 【保健功能】 辅助降血糖、减肥
- 【适宜人群】 血糖偏高者、单纯性肥胖人群
- 【不适宜人群】 少年儿童、孕期及哺乳期妇女
- 【食用方法及食用量】 每日2次，每次1袋，开水冲饮
- 【产品规格】 3.0g/袋
- 【保质期】 24个月
- 【贮藏方法】 密闭、阴凉干燥处存放
- 【注意事项】 本品不能代替药物

L-arabinose approved as Health Food in China (Sugar reducing and losing weight)

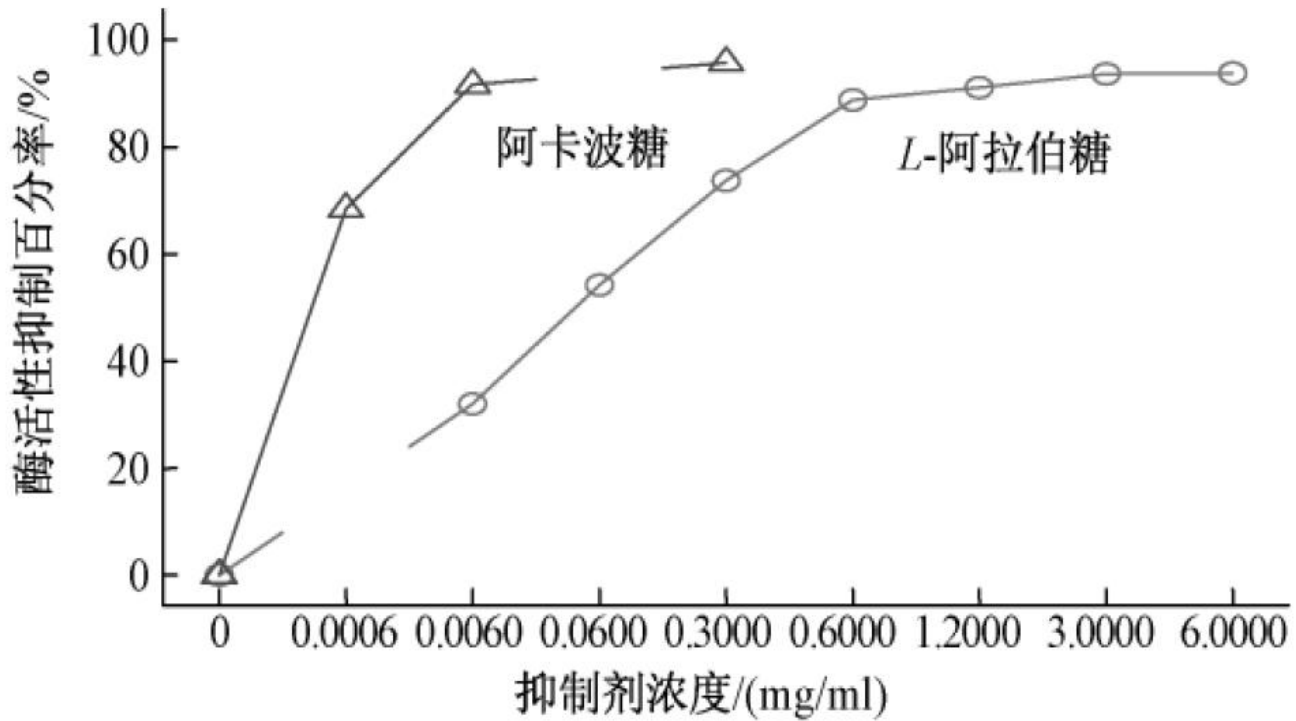
L-arabinose Application

Characteristics!

Sugar Reduction

Vitro Study on enzyme activity Inhibition

-- 《Vitro study on the inhibitory activity of l-arabinose on glycosylase》



曲线断点处为此浓度条件下未测定

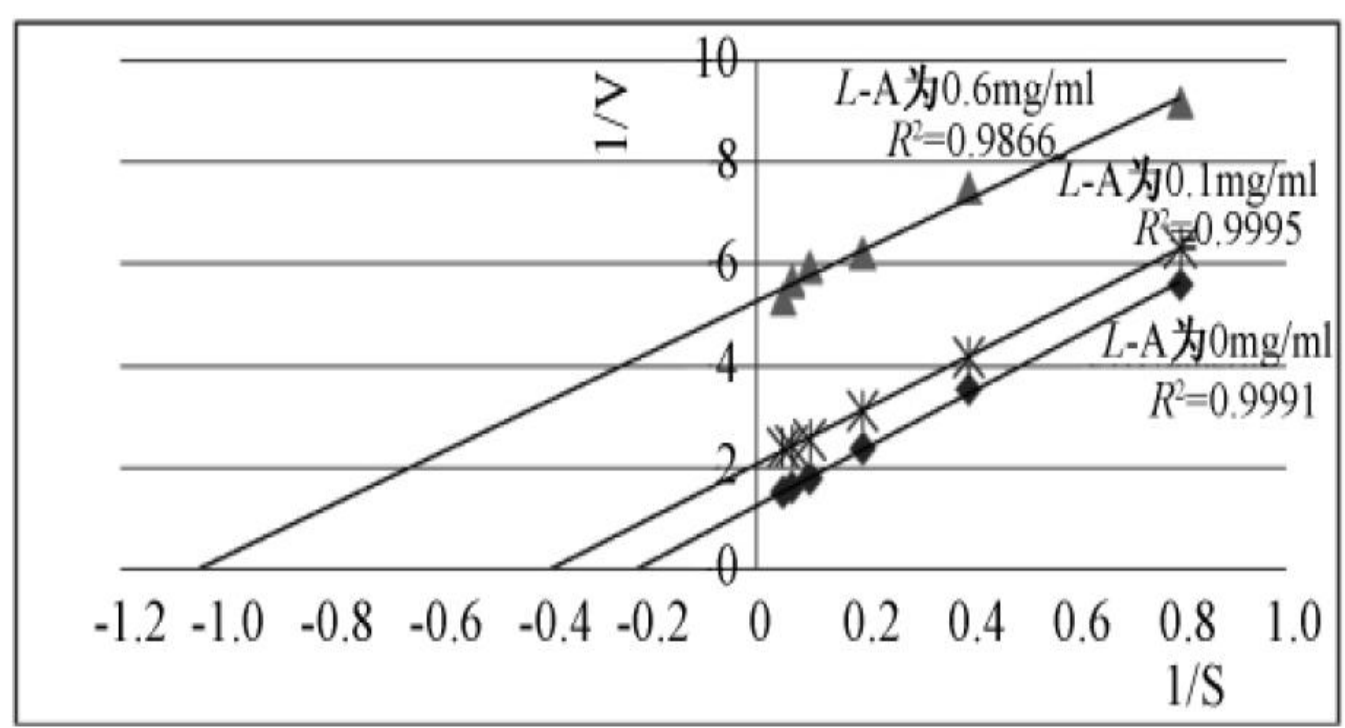
图 1 以蔗糖为底物, L-阿拉伯糖对 α -葡萄糖苷酶活性抑制曲线

With sucrose as substrate, l-arabinose has a high inhibition rate to small intestinal glycosidase and a good dose-response relationship

L-A concentration /mg·ml ⁻¹	sucrose content convert based on L-A concentration/%	Inhibition rate of enzyme activity/%
0.3	0.5	54.1
6.0	10	92.1

Kinetics of enzymatic reaction in vitro

-- 《vitro study on the inhibitory activity of l-arabinose on glycosylase》



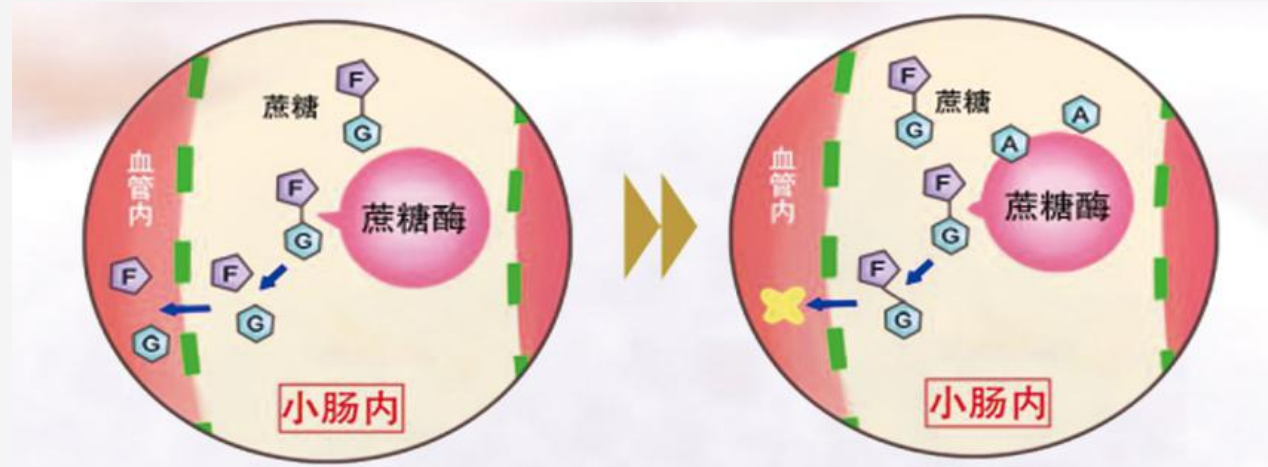
C_{L-A} ↑ K_m ↓ V_{max} ↓

L-阿拉伯糖对蔗糖为底物时 α -葡萄糖苷酶的抑制作用类型为**反竞争性抑制**。

The inhibition of l-arabinose to sucrose was anticompetitive inhibition

图 2 蔗糖为底物时, L-阿拉伯糖对 α -葡萄糖苷酶抑制效应的 Lineweaver-Burk 图

The digestion and absorption of sucrose in the body



蔗糖经由小肠内的蔗糖酶分解成葡萄糖(G)与果糖(F),进入血液。

L-阿拉伯糖(A)可抑制蔗糖酶的活性,使蔗糖在小肠内不被分解,不进入血液,直接带往大肠内。

Sucrose is digested and absorbed in the human body by the sucrase enzyme in the small intestine, which breaks it down into glucose and fructose, which is absorbed into the blood and participates in the metabolic cycle of energy and nutrients.

L-arabinose can inhibit the enzymatic decomposition of sucrose and reduce the digestion and absorption of sucrose. At the same time, L-arabinose itself is not absorbed by the human body, nor will it affect the blood glucose level, ultimately achieving the effect of lowering GI.

Effect of l-arabinose on sucrose metabolism in human body

-- 《Effects of l-arabinose and xylo-oligosaccharide on carbohydrate metabolism in human body》

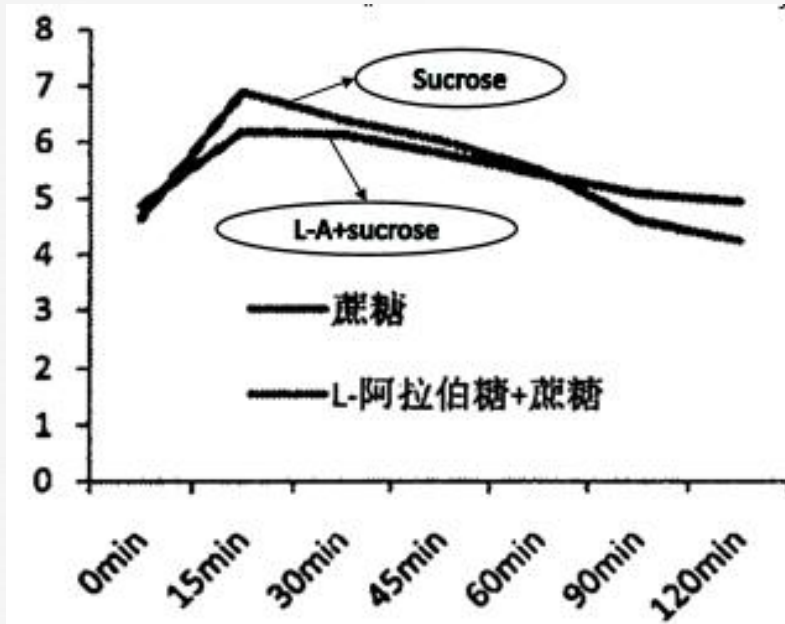


图 1 不同时点的血糖水平 (蔗糖&L-阿拉伯糖, mmol/L, n=9)

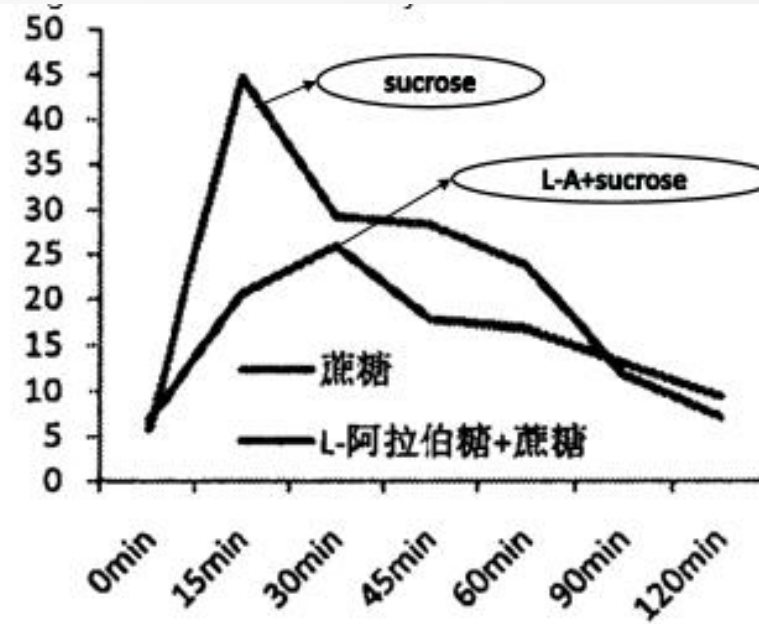
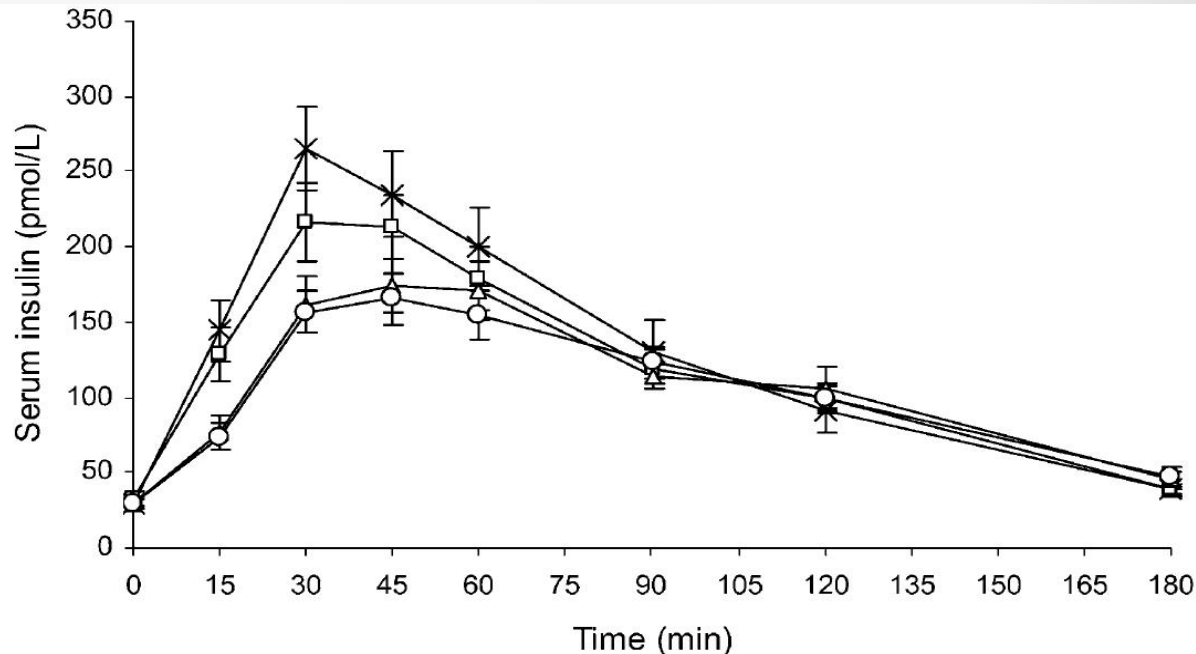
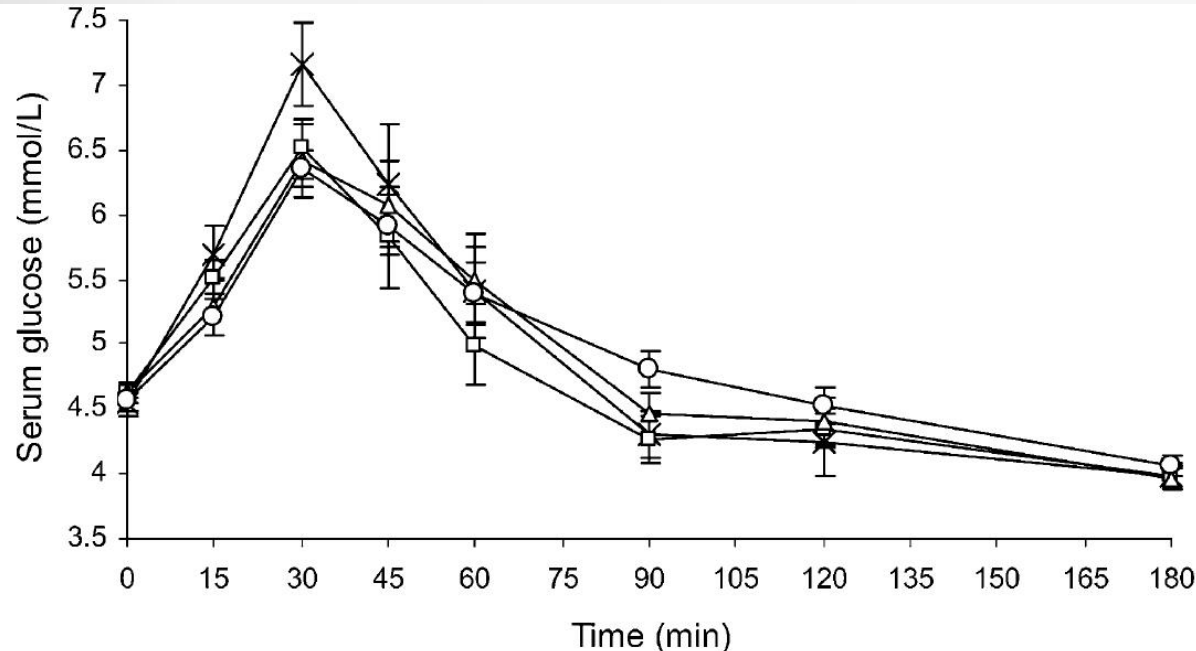


图 2 不同时点的胰岛素水平 (蔗糖&L-阿拉伯糖, mIU/L, n=9)

Compared with sucrose, the consumption of sucrose + 5% l-arabinose reduced the peak values of glucose and insulin, and the GI value decreased by 34.2%.

L-阿拉伯糖对蔗糖代谢影响的人体试验研究

-- 《The effects of l-arabinose on intestinal sucrose activity does-response studies in vitro and in humans》



L-A consumption/g	sucrose content convert based on L-A consumption/%	Marks
0	0	×
1	1.3	□
2	2.7	△
3	4	○

The addition of 4% l-arabinose in sucrose reduced peak of glucose by 11% and insulin by 33%

Effect of l-arabinose on sucrose metabolism

-- 《ラットにおけるショ糖の消化吸収およびエネルギー代謝に対するL-アラビノースの抑制作用》
 (《Inhibition of l-arabinose on sucrose digestion, absorption and energy metabolism in rats》)

大鼠经口2.5g/kg剂量¹⁴C标记的蔗糖，测量6h的累积呼气¹⁴CO₂和胃肠道放射性残留。
 The rats were administered 2.5g/kg of ¹⁴C-labeled sucrose orally to measure the 6h cumulative exhaled ¹⁴CO₂ and gastrointestinal radioactive residues

Control Group	时间/h		¹⁴ C cumulative collection/%
		3	
	6		35.3

Test Group	L-a /mg·kg-1	时间/h	¹⁴ C Cumulative collection inhibition rate/%
	50		3
6			31.7
250		3	73.2
		6	45.6
Acarbose 1.5		3	52.7
		6	27.2

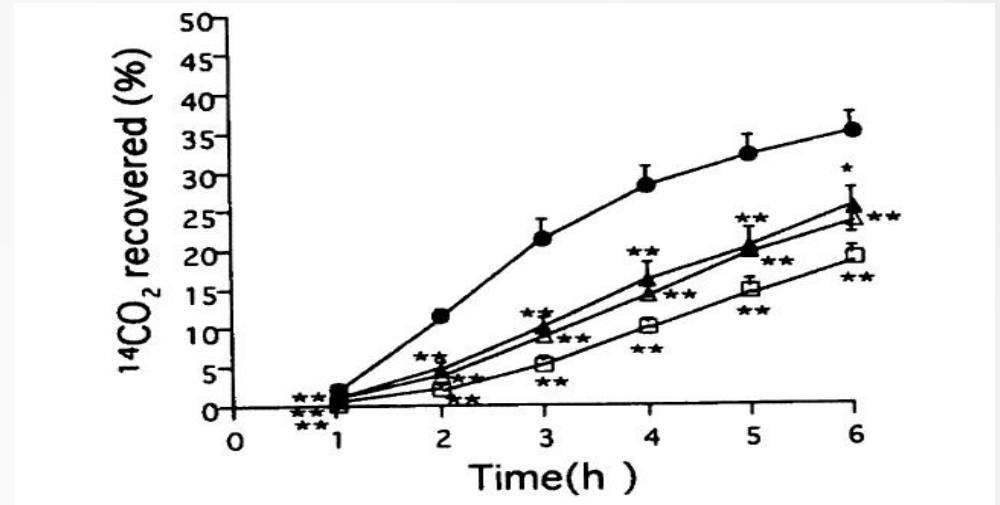


Fig. 2. Cumulative curves of expiratory ¹⁴CO₂ after ¹⁴C-labeled sucrose ingestion (●) in rats.

L-Arabinose (△, 50 mg/kg ; □, 250 mg/kg) or acarbose (▲, 1.5 mg/kg) was administered simultaneously with ¹⁴C-sucrose. Values are the mean (n=3) ± SEM. **p<0.01 ; *p<0.05 for L-arabinose- or acarbose-treated group vs. control group.

The accumulation curve of ¹⁴CO₂ exhaled after rats ingested ¹⁴C - labeled sucrose

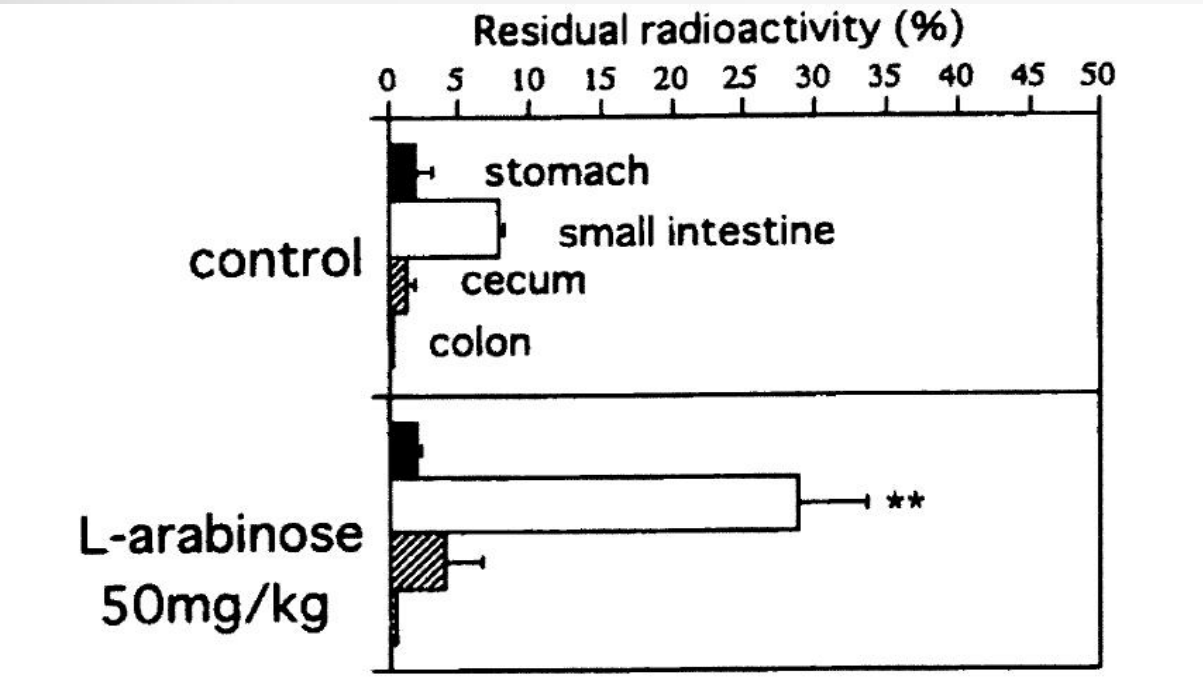


Fig. 3. Residual radioactivity of gastrointestinal tract 2 h after ¹⁴C-labeled sucrose ingestion in rats.

大鼠摄入¹⁴C标记的蔗糖2h后胃肠道放射性残留

2h : 小肠 (small intestine)、盲肠 (cecum)

6h : 盲肠 (cecum)、结肠 (colon)

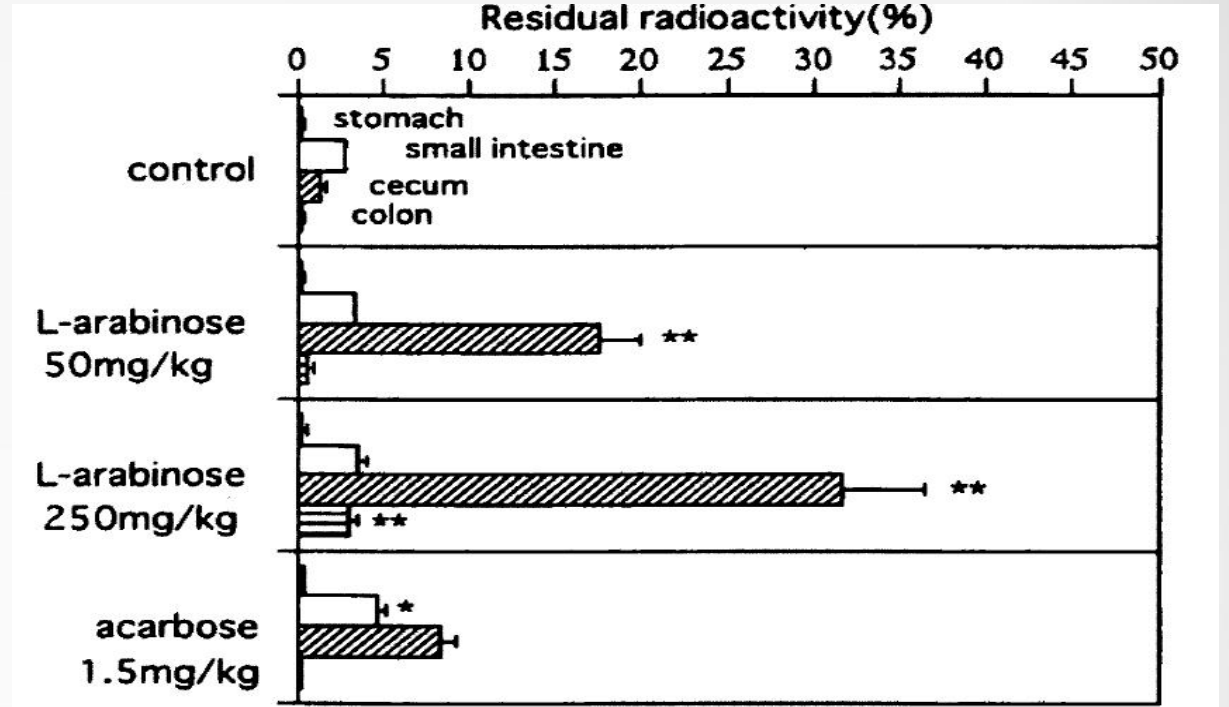


Fig. 4. Residual radioactivity of gastrointestinal tract 6 h after ¹⁴C-labeled sucrose ingestion in rats.

大鼠摄入¹⁴C标记的蔗糖6h后胃肠道放射性残留

- 对照组6h尿¹⁴C放射性排泄率为0.8% , L-阿拉伯糖 (50、 250mg/kg) 和阿卡波糖 (1.5mg/kg) 给药组分别为1.7% , 1.4%和1.3%。在低值时 , 没有显著差异。在实验过程中 , 排泄的动物较少 , 并且收集到的粪便没有显示¹⁴C放射性。
- In the control group, the radioactive excretion rate of urine ¹⁴C at 6h was 0.8%,L-arabinose (50, 250mg/kg) and acarbose (1.5mg/kg) were administered to 1.7%, 1.4% and 1.3%. At low values, there was no significant difference, During the experiment, fewer animals were excreted, and the collected feces did not show ¹⁴C radioactivity.
- 这些结果表明 , 当同时摄入L-阿拉伯糖时 , 会降低蔗糖的消化 , 吸收 , 从而减少了产能分解。
- These results indicate that simultaneous intake of l-arabinose results in reduced sucrose digestion and absorption

lipid-lowering

Study on the effect of L-arabinose on high-fat diet

-- 《L-arabinose inhibited the increase in body fat induced by a high-fat diet in rats》)

表 1 L-阿拉伯糖对大鼠体重的影响

组别	动物数 (只)	初体重 (g)	第 1 周 (g)	第 2 周 (g)	第 3 周 (g)	第 4 周 (g)	终体重 (g)
阴性对照组	10	158.2 ± 5.2	212.8 ± 7.8	254.3 ± 9.9	292.6 ± 9.1	315.3 ± 9.0	335.1 ± 8.1
低 (500 mg/kg)	10	155.4 ± 10.0	212.1 ± 13.7	254.3 ± 12.3	289.7 ± 12.0	313.6 ± 12.8	335.9 ± 14.9
中 (1 000 mg/kg)	10	156.0 ± 7.4	210.1 ± 11.5	254.3 ± 14.1	289.2 ± 15.4	312.8 ± 17.6	332.6 ± 18.2
高 (3 000 mg/kg)	10	159.2 ± 6.7	215.4 ± 8.3	254.6 ± 8.7	288.0 ± 9.3	310.2 ± 12.2	329.7 ± 14.8*
肥胖模型组	10	158.9 ± 8.9	215.6 ± 12.9	257.7 ± 12.8	296.2 ± 14.6	322.0 ± 14.6	343.7 ± 13.0

注:与肥胖模型组比较,* $P < 0.05$ 。

- High Dose Group (3,000mg/kg) ,The final weight of the rats was lower than that of the obese control group
- There was no significant difference between the weekly intake and total intake of each dose group and the obesity model control group,This indicated that L-arabinose had no effect on the appetite of rats

表 2 L-阿拉伯糖对大鼠食物利用率的影响

组别	动物数 (只)	第 1 周 (%)	第 2 周 (%)	第 3 周 (%)	第 4 周 (%)	第 5 周 (%)	总利用率 (%)
阴性对照组	10	37.1 ± 3.5	27.8 ± 4.3	23.6 ± 1.8	15.5 ± 2.3	15.1 ± 4.8	24.1 ± 0.9
低 (500 mg/kg)	10	44.0 ± 3.3	33.9 ± 5.0	26.7 ± 3.1	19.4 ± 3.1	17.4 ± 3.1	28.3 ± 1.6
中 (1 000 mg/kg)	10	40.1 ± 4.2	35.7 ± 4.0	26.1 ± 3.4	18.1 ± 4.1	14.0 ± 3.3	26.8 ± 2.0*
高 (3 000 mg/kg)	10	42.1 ± 4.5	31.6 ± 2.7	26.2 ± 4.8	18.1 ± 4.5	15.4 ± 3.8	26.8 ± 1.4*
肥胖模型组	10	42.6 ± 5.5	35.0 ± 5.9	28.8 ± 4.7	20.5 ± 2.2	16.7 ± 3.0	28.8 ± 1.5

注:与肥胖模型组比较,* $P < 0.05$ 。

在摄入相同重量高脂饲料下，中、高剂量组大鼠体重增重比肥胖模型对照组增重减缓。

Under the same weight of high-fat diet, the weight gain in Medium and high-dose rats was slower than that of the obese model control group

表3 L-阿拉伯糖对大鼠体重、体脂、脂体比的影响($\bar{x} \pm s$)

组别	动物数 (只)	初体重 (g)	终体重 (g)	增重 (g)	体脂湿重 (g)	脂体比 (%)
阴性对照组	10	158.2 ± 5.2	335.1 ± 8.1	176.9 ± 5.7	4.72 ± 0.62	1.41 ± 0.20
低(500 mg/kg)	10	155.4 ± 10.0	335.9 ± 14.9	180.5 ± 11.8	6.25 ± 0.62	1.86 ± 0.14
中(1 000 mg/kg)	10	156.0 ± 7.4	332.6 ± 18.2	176.6 ± 15.2	6.25 ± 0.66	1.88 ± 0.15
高(3 000 mg/kg)	10	159.2 ± 6.7	329.7 ± 14.8*	170.5 ± 12.0**	5.92 ± 0.57**	1.79 ± 0.14*
肥胖模型组	10	158.9 ± 8.9	343.7 ± 13.0	184.8 ± 10.0	6.80 ± 0.67 ^{##}	1.98 ± 0.18 ^{##}

注:与阴性对照组比较,[#] $P < 0.05$,^{##} $P < 0.01$;与肥胖模型组比较,^{*} $P < 0.05$,^{**} $P < 0.01$ 。

与肥胖模型组比较,高剂量组大鼠终体重、增重、体脂湿重、脂体比均减少且差异显著。说明在给大鼠高剂量L-阿拉伯糖1个月,能够抑制大鼠高脂饮食所致体内脂肪增加的作用。

Compared with the obesity model group, the final body weight, weight gain, body fat wet weight and fat body ratio of rats in the high-dose group were all decreased and the differences were significant. This indicated that high dose of l-arabinose was given to rats for 1 month, which could inhibit the increase of body fat caused by high-fat diet in rats.

L-阿拉伯糖对正常及高糖高脂喂养大鼠生长及糖脂代谢的影响

L-阿拉伯糖对高糖高脂喂养小鼠体质量 及耐糖量的影响

L-阿拉伯糖对降低高糖高脂喂养 小鼠体重增长速率的影响

桂堂辉^{1,2}, 何成新^{1*}, 李赐玉^{1,2}, 邹贵勉³

(1. 广西壮族自治区中国科学院 广西植物研究所, 广西 桂林 541006; 2. 广西师范大学 生命科学学院, 广西 桂林 541004; 3. 解放军第 181 医院 全军肾移植与透析治疗中心, 广西 桂林 541002)

摘要: 将 L-阿拉伯糖通过口服的方法配合高糖高脂饲料喂养 SPF 级昆明雄性小鼠, 观察不同剂量 L-阿拉伯糖对小鼠增重速率的影响。将 100 只小鼠随机均分为 A、B、C、D、E 五组 (五组小鼠体重没有显著差异), 分别采用高、中、低和零四种剂量水平口服 L-阿拉伯糖水溶液 1 个月, 另设 E 组为空白对照, 记录小鼠体重和体长变化。结果表明: L-阿拉伯糖对小鼠的体重增长有剂量依存关系, 小剂量 (0.5 g/kg) 即可产生作用, 但只有添加量达到一定的浓度后 (1.0 g/kg), 其抑制小鼠体重增长速率作用才有明显效果 ($P < 0.05$)。L-阿拉伯糖能有效减缓肥胖小鼠的体重增长速率。

关键词: L-阿拉伯糖; 剂量; 体重

Prebiotics

L-阿拉伯糖等对双歧杆菌等促进试验结果报告如下

菌种名称	糖种类	L-阿拉伯糖	低聚木糖	低聚果糖	低聚麦芽糖	低聚半乳糖	水苏糖 (德施普)	水苏糖 (大鹏)	棉子糖	对照
1. 嗜酸乳杆菌		-	-	+	+	++	+	+	+	±
2. 长双歧杆菌		++	+++	+++	+	+++	++	++	+	±
3. 齿双歧杆菌		+	+	+	+	++	+	+	+	±
4. 青春双歧杆菌		+++	+++	+++	+++	+++	+++	+++	+++	±
5. 链状双歧杆菌		+	-	-	-	+	±	±	±	-
6. 婴儿双歧杆菌		-	±	++	++	+++	++	++	+	±
7. 两歧双歧杆菌		+	-	-	-	+++	-	-	-	±
8. 短双歧杆菌		-	-	-	++	+++	++	++	++	±
9. 角双歧杆菌		+	+	+	+	+	+	+	-	-
10. 假链状双歧杆菌		±	-	-	-	-	-	-	±	±
11. 植物乳杆菌		±	±	-	-	-	-	-	±	±

说明：菌落数 $>10^6 \sim 10^8$ CFU/ml 记 +++；菌落数 $>10^4 \sim 10^6$ CFU/ml 记 ++；菌落数 $>10^2 \sim 10^4$ CFU/ml 记 +；
菌落数 $<10^2$ CFU/ml 记 ±；菌落数 <10 CFU/ml 记 -。

注：所有菌落数与空白对照组相比
结论：



L-阿拉伯糖能够显著增殖肠道长双歧杆菌、青春双歧杆菌等有益菌群。

有益菌群通过微生物活动能够酸化肠道，促进肠道蠕动，增强肠道自我调节功能。

L-arabinose can significantly proliferate intestinal bifidobacterium longum, youth bifidobacterium, etc

L-arabinose applications in food

Sugar Bloker products

WEIGHT MANAGEMENT



Sweet FX

- Helps lessen the absorption of sugar (sucrose)*
- Reduces occasional stress and helps improve mood*
- Supports healthy blood sugar levels already in the normal range*

Dietary Supplement
90 CAPSULES

GUARANTEED PURE

Sweet FX contains L-Arabinose that helps lessen the absorption of sugar (sucrose) and chromium which is known to help maintain healthy blood sugar levels already in the normal range. L-Theanine reduces occasional stress and helps improve mood. Whether you're concerned about managing your weight or encouraging normal glucose balances, add some positive sweetness to your day with Sweet FX.*

RECOMMENDATION
Take three capsules with your largest meal or when you consume food that is high in starch or sugar - once daily.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

This bottle was sealed for your protection. Do not use if inner seal is missing or damaged. Nature's Sunshine uses natural source materials that are subject to color variation.

Keep out of the reach of children.

Product of U.S.A.



Stock No. 3068
NATURE'S SUNSHINE PRODUCTS, INC.
Spanish Fork, Utah 84660 1-800-223-8225
www.naturessunshine.com

Supplement Facts
Serving Size 3 Capsules
Servings Per Container 30

Amount Per 3 Capsules	%Daily Value
Chromium (Food Bound)	126 mcg 360%
Proprietary Blend	1230 mg †
L-Arabinose, L-Theanine, Cassia Cinnamon Bark Extract (<i>Cinnamomum cassia</i>).	
†Daily Value not established	

Other Ingredients: Capsule (gelatin, water), cellulose (plant), magnesium stearate (vegetable).

010030680817

LOT: Full Potency Through:

- Helps Block Sugar Absorption*
- Supports Immune System*
- Reduces Fat Synthesis*
- Promotes Prebiotics*
- Helps Weight Loss*

"Thank you for choosing the Bright Leaf Signature line. Our products are made of the highest quality standards to bring you happiness and fulfillment. We hope that you share the same passion as we do when it comes to health." -Bright Leaf

www.blsig.com



Dietary Supplement



All Natural SUGAR BLOKER™

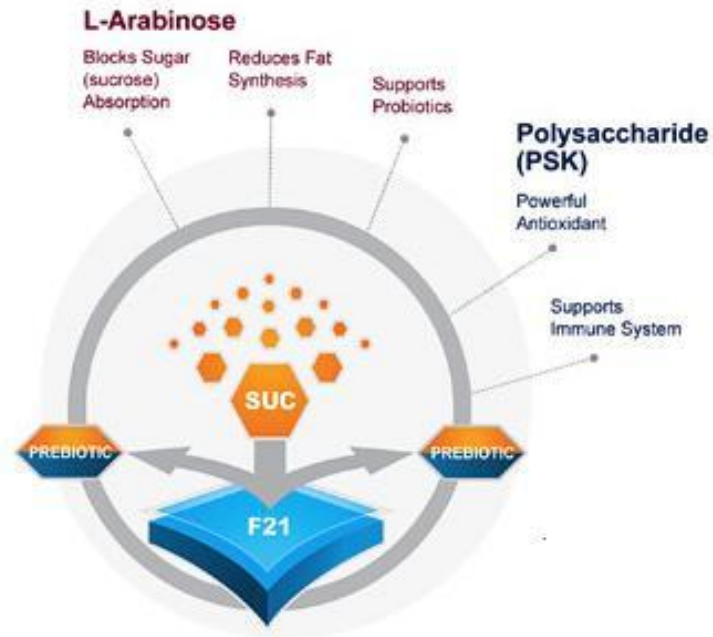
Zero Calories | Zero Caffeine | Zero Guilt

**Plant-Based
Gluten-Free
Non-GMO**

150 Tablets



Sugar Bloker products



ALL Natural
**Sugar
Blocker**



L- arabinose, dietary fiber, polysaccharides

DSwiss Coffee



- Burns Fat
- Inhibits Fat Production
- Suppresses Appetite
- Reduces Carbohydrate Absorption
- Increases Metabolism
- Burns Abdominal Fats

Coffee



Green Coffee Beans

- The effective fat burner to reduce body weight
- Reduce fat absorption
- Improve fat burning hormone
- Boost body metabolism by up to 3-11%



Garcinia Cambogia

- Block the conversion of sugars and starches into fats
- Inhibit fat production
- Suppress appetite



Green Tea

- Rich antioxidant and it contains high level of polyphenols
- Has thermogenic effects that aids in weight loss



Aloe Vera

- Contain numerous vitamins and minerals agents
- Anti-inflammatory and anti-microbial



White Kidney Beans

- Contain high vitamins, minerals and fiber
- Reduce the amount of starch converted into sugar
- Reduce carbohydrates absorption



Other Special Ingredients

L-Arabinose

- Prevent sucrose from being hydrolyzed into glucose and fructose
- Inhibit lipogenesis in the liver
- Prevent the increase of blood glucose



Oligosaccharides (Inulin)

- Decrease constipation
- Lower cholesterol and triglycerides



Palatinose

- Provide the body with balanced and sustained energy



Prebiotics



1 Jar

RETAIL: ~~\$99~~

\$49

+\$4.95 Shipping 

You Save \$50 per jar.

THIS IS A ONE TIME PAYMENT
THERE ARE NO MONTHLY CHARGES

Supplement Facts

Serving Size: 1 Scoop (4.5 g)
Servings Per Container: 30

	Amount Per Serving	%Daily Value
Calories	16	
Total Carbohydrate	4 g	1 %
Dietary Fiber	3 g	11 %
Total Sugars	<1 g	†
Includes <1g Added Sugars		2%
Prebiotic Proprietary Blend	4.5 g	†
Inulin		
Fructooligosaccharides		
L-Arabinose		
Oat Fiber Extract (15% β-Glucan)		
Konjac Root		

† Daily Value not established

Other Ingredients: Silicon Dioxide

Prebiotics

Home | A - Z Product Listing | Pre+Probiotic (120) Vegetarian Capsules



Pre+Probiotic (120) Vegetarian Capsules

Your Price: \$35.10
Support for healthy gut microflora.*
Part Number: 1848
Availability: In Stock.
RECURRING ORDER

Would you like to have this product automatically shipped to you?

If yes, select frequency ▾



EMAIL A FRIEND

Home | A - Z Product Listing | Pre+Probiotic (120) Vegetarian Capsules

Supplement Facts	
Serving Size Three (3) Vegetarian Capsules Servings Per Container 40	
Amount Per Serving	%Daily Value
PretecX™ Prebiotic Fiber Complex (95% Xylooligosaccharides (XOS)) (D-Xylose, L-Arabinose, Glucose)	1g **
LactoSpore® (Bacillus coagulans) (2 billion CFU ¹ per serving)	133.34mg **

**Daily Value not established.

Other Ingredients: Silicon dioxide, gluten-free maltodextrin, vegetarian capsule (hypromellose, purified water).
¹Calony farming units (CFU) at time of encapsulation.
PretecX™ is a trademark of AIDP, Inc.
PretecX™ is a patent protected Xylooligosaccharide exclusively distributed by AIDP, Inc.
LactoSpore® is a registered trademark of Sabinsa Corporation.

Pre+ProBiotic Supplement Facts Box



EMAIL A FRIEND

Pre+Probiotic (120) Vegetarian Capsules

Your Price: \$35.10
Support for healthy gut microflora.*
Part Number: 1848
Availability: In Stock.
RECURRING ORDER

Would you like to have this product automatically shipped to you?

If yes, select frequency ▾

Quantity

1

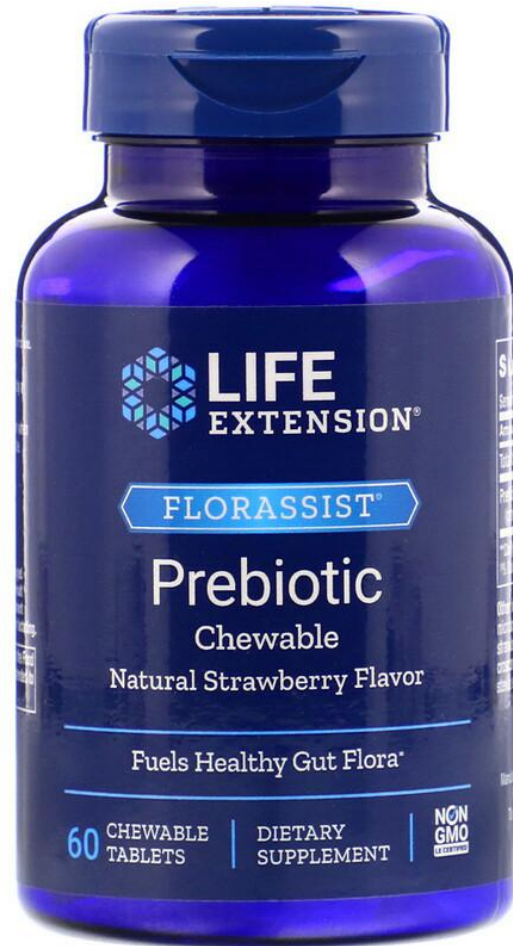
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Add to Cart

注册去看看朋友们都喜欢什么。

Prebiotics



Supplement Facts

Serving Size 1 Chewable Tablet

Amount Per Serving	% Daily Value	
Total carbohydrate	2 g	<1% [†]
PreticX™ Prebiotic Fiber (providing 1,000 mg xylooligosaccharides)	1,400 mg	**

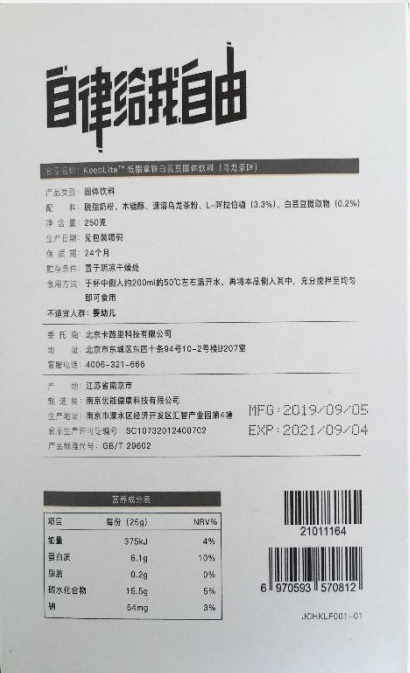
**Daily Value not established.

[†]% Daily Value is based on a 2000 calorie diet.

Other ingredients: xylitol, maltodextrin, mannitol, micro-crystalline cellulose, natural beet color, natural strawberry flavor, glucose, D-xylose, stearic acid, croscarmellose sodium, arabinose, gum arabic, silica, stevia extract.

Manufactured for:
Quality Supplements and Vitamins, Inc.
Ft. Lauderdale, FL 33309
LifeExtension.com

To report a serious adverse event or obtain product information, contact 1-866-280-2852.



Meal Replacement products

Biscuits/Cookies



Bird's Nest Berry Nutrition Cookie 燕窝莓果营养饼干

配料

小麦粉、棕榈油、结晶麦芽糖醇、藜麦、燕麦、燕窝、蔓越莓、奇亚籽、白芸豆、魔芋粉、抗性糊精、小麦纤维、聚葡萄糖、苹果粉、双孢菇粉、猴头菇粉、水苏糖、L-阿拉伯糖、碳酸氢铵、碳酸氢钠、β-胡萝卜素。

Ingredients

Wheat flour, Palm oil, Crystalline maltitol, Quinoa, Oatmeal, Bird's nest, Cranberry, Chia seeds, White kidney beans, Konjac flour, Resistant dextrin, Wheat fiber, Polydextrose, Apple powder, Agaricus powder, Hericium mushroom powder, Stachyose, L-arabinose, Ammonium bicarbonate, Sodium bicarbonate, Beta carotene.

Allergy : Contains wheat, oatmeal.

Reminder : This product is not suitable for pregnant women & children.

Manufactured exclusively for UFRESH CENTER
1011 East Las Tunas Drive, San Gabriel, CA 91776, USA
1-800-903-1988
www.ufreshcenter.com

Made in P.R.C.

Best Before : As shown on the box

Dynamic U-Multigrain Twists (Maple syrup)

多穀物麻花捲(楓糖杏仁) **Zero Cholesterol**

Made using non-GMO corn, brown rice, and wheat.

You can eat the scent of dietary fiber and cereals.



- ✓ Vegetarian
- ✓ Monde Selection Award in 2017.
- ✓ L-arabinose reduces sucrose absorption

Net weight of content : 120g
Recommended price : NT\$125



Oats Twist

Product Name: Dynamic U-Multigrain Twists (Maple syrup)

Ingredient: Brown Rice、Corn (non GMO)、Wheat、Oat、Brewer's yeast、Sugar、Palm oil、Maple syrup、Glucose、Fructose、Almond、Trehalose、L-Arabinose、Salt、Soya lecithin、Vitamin E

Net Weight: 120g

Shelf life: Shown on the package (YY/MM/DD)

Better if used by: Shown on the package (YY/MM/DD)

Preserved Method: Keep at room temperature

Country of Origin: Taiwan

Nutrition Facts

6 Servings Per Container	
Serving size	20g
Amount per serving	
Calories	89
	% Daily Value*
Total Fat 2g	3%
Saturated Fat 0g	1%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 38mg	2%
Total Carbohydrate 15g	6%
Dietary Fiber 1g	4%
Total Sugars 4g	
Includes 4g Added Sugars	8%
Protein 2g	
Vitamin D 0mcg	0%
Calcium 9mg	1%
Iron 0mg	2%
Potassium 70mg	1%

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.



【配料】黑糖、阿胶、L-阿拉伯糖
 【产品标准代号】Q/GZY0012S
 【生产许可证】SC10732011500067
 【净含量/规格】200克
 【产地】江苏南京 【保质期】24个月
 【生产日期】见封口或喷码
 【贮存条件】清洁卫生、通风、阴凉、干燥
 建议开封后冷藏保存
 【食用方法】取一块黑糖置于杯中，冲入150ml-200ml 开水搅拌，溶化后即可食用。也可直接食用。(本产允许有少量漂浮或沉淀物)
 * 本产品不适宜婴幼儿食用 *

Sugar blending



sweet water can



Beverage

营养成分表

项目	每100毫升	NRV%
能量	0千焦	0%
蛋白质	0克	0%
脂肪	0克	0%
碳水化合物	0克	0%
钠	20毫克	1%

品名:青提冰淇淋风味含气饮料(汽水)
 配料:碳酸水(水、二氧化碳)、L-阿拉伯糖、提子清汁、柠檬酸、柠檬酸钠、苯甲酸钠、蔗糖素、柠檬黄、亮蓝、食品用香精
 执行标准:GB/T 10792
 生产日期:见瓶身或瓶盖
 保质期:12个月

净含量:275ml



fish ball



Health sugar--Japan



产品介绍

品牌名称: MOVA 原产国: 日本

进口商: 绿地众选(上海)国际贸易有限公司

适用人群: 18-40岁年轻女性, 孕妇及婴幼儿不宜

商品名称: 胶原蛋白果汁饮料

种类: 抗糖口服液

配料: 水、鱼胶原蛋白肽粉、浓缩苹果汁、雪莲培养物、山葵粉、山竹粉、L-阿拉伯糖、糙米粉、玫瑰茄粉、重瓣红玫瑰等

保质期: 18个月 规格: 30ml*10/盒

储存条件: 置于阴凉干燥处, 避免高温及阳光直射

使用方法: 直接饮用, 睡前1小时效果更佳, 开瓶后一次性喝完。

Resistance to sugar drinks--Japan



Truvivity--Amway

Innocent Chocolate



Supplement Facts

Serving size 37.5g
Servings per package: 2

Amount per serving	
Calories 148	
% Daily Value*	
Total Fat 9g	11%
Saturated fat 5g	25%
Trans fat 0g	
Cholesterol 0mg	0%
Sodium 5mg	0%
Total carb 5g	2%
Dietary fiber 13g	46%
Sugars 0g	
Erythritol 7g	
Net carbs minus fiber 0g	
Protein 8g	16%
Vitamin A 0% • Vitamin C 0%	
Calcium 0% • Iron 5%	

*Percent Daily Values (DV) are based on a 2,000 calorie diet.

L-arabinose
amount per serving: 1,000 mg
% Daily Value: **

** Daily Value (DVI) not established

60% Smooth Dark Cacao Bar

Other Ingredients:
organic and fair trade cacao, organic yellow pea protein, organic erythritol, organic stevia, beta cyclodextrin, glycerol monooleate (plant source emulsifier)



Innocent Chocolate began in January 2013 as a product to help with the epidemic of childhood diabetes and obesity.

Healtang Brief Introduction



Healtang Biotech Co., Ltd is a high-tech enterprise devoted to development, production and sales of carbohydrates and their derivatives for the pharmaceutical, food, Nutraceuticals, biochemical and fine chemical industries, etc,. Main products include, L-arabinose, D-xylose, xylitol, L-arabinose and D-xylose syrup

Healtang been certified by HACCP、ISO9001、ISO22000、KOSHER、HALAL.



**Refined
D-xylose**



Xylitol



L-arabinose



**L-arabinose
Syrup**



**Health
Product**

Thanks For Watching