科信食品与营养信息交流中心
China Food Information Center

科学认识益生菌

澄清益生菌的 10 个认知误区

Probiotics: 10 Myths and Misconceptions

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益生菌（probiotics）和肠道微生物群（gut microbiota，俗称肠道菌群）是近年来国际上的研究热点和社会热议话题。在媒体报道中，益生菌常具有各种健康功效，还能“治疗多种疾病”；但也有部分媒体报道“益生菌无用”，甚至“益生菌有害”。

相互矛盾的信息不利于消费者科学认知和合理选择，为此，科信食品与营养信息交流中心联合中国疾控中心营养与健康所、中华预防医学会食品卫生分会、中华预防医学会健康传播分会等专业机构，围绕益生菌的 10 个常见误区加以澄清和解读，供消费者参考。

Probiotics and gut microbiota are the research focuses and hot topics on the media in recent years around the world. In media reports, probiotics often have various health benefits and can be used to “treat many diseases”; however, some media reported that probiotics were useless or even harmful.

The contradictory information is not conducive to consumers’ scientific understanding and reasonable purchase. Therefore, China Food Information Center, together with National Institute for Nutrition and Health, Chinese Center for Disease Control and Branch of Food Hygiene, Chinese Preventive Medicine Association,Branch of Health Communication, Chinese Preventive Medicine Association and other professional organizations, hereby clarifies and interprets 10 misconceptions of probiotics to give reference for consumers.

误区 1：益生菌 = 乳酸菌

益生菌是指一类活的微生物，当摄入足够量时，可对人体健康发挥有益作用，如调节肠道菌群、促进营养物质吸收、调节免疫等作用[1-3]。乳酸菌一般是指能发酵糖并主要生成乳酸的细菌的总称，它并不是一个严格的微生物分类名称。

益生菌不等于乳酸菌。益生菌包含很多菌株，大多数益生菌属于乳酸菌中的双歧杆菌和乳杆菌，如嗜酸乳杆菌、动物双歧杆菌（乳双歧杆菌）、鼠李糖乳杆菌、短双歧杆菌、长双歧杆菌、两歧双歧杆菌、植物乳杆菌、干酪乳杆菌、青春双歧杆菌、副干酪乳杆菌、罗伊氏乳杆菌等[1-3]。

但并不是所有的乳酸菌都是益生菌，有一些乳酸菌甚至可能对人体是有害。只有健康功效经过科学验证过的、特定的乳酸菌菌株才可以称为益生菌[2-3]。此外，益生菌也不一定必须属于乳酸菌，某些具有健康功效的酵母菌和芽孢杆菌也可以是益生菌，比如鲍氏酵母菌、凝结芽孢杆菌等[2-3]。

Misconception 1: Probiotics are equal to Lactic Acid Bacteria

Probiotics refer to a group of live microorganisms, which when administered in adequate amounts confer a health benefit on the host, such as regulating gut microbiota, promoting the absorption of nutrients, regulating immunity and so on[1-3]. Lactic acid bacteria generally refer to bacteria that can ferment sugar and mainly produce lactic acid. It is not a taxonomic name for microbes.

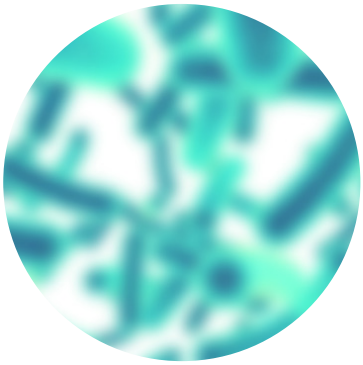
Probiotics are not equal to the lactic acid bacteria. Probiotics include many strains, most of which are bifidobacterium and lactobacillus among the lactic acid bacteria, such as Lactobacillus acidophilus, Bifidobacterium animalis (Bifidobacterium lactis), Lactobacillus rhamnosus, Bifidobacterium breve, Bifidobacterium longum, Bifidobacterium bifidum, Lactobacillus plantarum, Lactobacillus casei, Bifidobacterium adolescentis, Lactobacillus paracasei, Lactobacillus reuteri, etc.[1-3].

But not all lactic acid bacteria are probiotics. Only the specific lactic acid bacteria strains with scientifically verified health benefits can be called probiotics[2-3]. In addition, probiotics do not necessarily belong to lactic acid bacteria. Some yeasts and bacillus with health benefits also belong to probiotics, such as Saccharomyces boulardii, Bacillus coagulans, etc.[2-3].

误区 2：益生元 = 益生菌

益生元不是益生菌。益生元（prebiotics）是指可被肠道微生物选择性利用，并产生一定健康功能的一类物质[3-4]。常见的益生元包括低聚果糖、低聚异麦芽糖、菊粉、低聚半乳糖、母乳低聚糖等[3-4]。

虽然益生元不能被人体消化，但它能促进肠道有益菌的生长繁殖从而促进人体健康，因此通常情况下，益生菌和益生元合理搭配使用效果会更好，比如低聚果糖、低聚半乳糖、菊粉与双歧杆菌的搭配可以促进双歧杆菌增殖和发挥作用[2-3]。



Misconception 2: Prebiotics are equal to Probiotics

Prebiotics are not equal to probiotics. Prebiotics refer to a group of substances that can be selectively utilized by gut microbiota to bring some health benefits[3-4]. Common prebiotics include fructo-oligosaccharide, isomaltooligosaccharide, inulin, galactooligosaccharide, human milk oligosaccharides, etc.[3-4]

Although prebiotics cannot be digested by the human body, they can promote the growth and propagation of intestinal beneficial microorganisms. Therefore, in general, a good combination of probiotics and prebiotics works better. For example, fructo-oligosaccharide, galactooligosaccharide and inulin, with bifidobacteria, can promote the proliferation and function of bifidobacteria[2-3].

误区 3：死菌也算益生菌

死菌的代谢产物和细胞成分可能有一定健康益处，比如多糖、短链脂肪酸等物质都是对健康有益的[5-8]。但大多数研究表明，益生菌活菌的效果优于相应的死菌[9-10]。

不过，根据世界卫生组织的定义，益生菌应当是活菌，死菌不属于益生菌[1]。在购买相关产品时应注意标签标示，如果标注了“杀菌型”或者“经过灭活处理”等字样，则产品不含有活菌，不属于益生菌产品。

Misconception 3: Inactivated Microorganisms are also Probiotics.

The metabolites and cellular components of inactivated microorganisms may have some health benefits, for instance, polysaccharides, short chain fatty acids and other substances are beneficial to health[5-8]. However, most studies have shown that effect of live microorganisms are better than inactivated microorganisms[9-10].

According to the definition of WHO, probiotics should be live microorganisms, while inactivated microorganisms do not belong to probiotics[1]. Consumers should pay attention to the label when purchasing related products. If it says “Pasteurized, sterilized” or “Inactivated”, the product is not a probiotic product.

误区 4：益生菌有害健康

益生菌必须经过相关部门批准才能上市销售，经过批准的益生菌，对于绝大多数人来说是安全的，也无证据表明长期食用益生菌有不良反应[11-12]。消费者可按产品说明书的建议使用，但是免疫缺陷患者、危重病人等特殊人群，使用前应咨询医生意见[13-14]。

Misconception 4: Probiotics maybe Harmful to Health.

Probiotics must be approved by relevant authorities before launching on the market. The approved probiotics are safe for the vast majority of people, and there is no evidence on adverse effects of long-term consumption of probiotics[11-12]. Consumers can consume the product according to the recommendations of the product brochure, but individuals such as patients with immune deficiency or in critical conditions should consult doctors before use[13-14].

误区 5：
益生菌的作用都是一样的

益生菌的作用具有菌株特异性[15-16]，即不同益生菌菌株的作用有所差异[1]，另外益生菌对宿主的作用也存在个体差异。因此，为便于消费者合理选择，相关企业在产品信息中应当准确标注菌株信息和适宜人群。消费者应该根据菌株信息、所声称的功能及自身健康状况选择，必要时请征询专家意见。

Misconception 5:
All Probiotics are the Same.

Probiotics are strain specific[15-16], that means, the functions of different probiotic strains are different[1], and the effects of probiotics on different hosts are also different. Therefore, to facilitate the reasonable consumption, the relevant enterprises should accurately indicate the strain information and applicable populations in the product information. Consumers should choose the appropriate products accordingly. If necessary, please consult experts.

[1] 注：菌株（strain）是指同一种微生物内不同来源标本中分离得到的相同菌种，也称为该菌种的不同菌株。

[1]Note: Strain refers to the same strain species isolated from different samples of the same microorganism, also known as different strains of the same species.

误区 6：
活菌数越多，益生效果越好

益生菌的作用跟剂量有关，摄入足够剂量的益生菌才能达到相应的效果，但不同的菌株其发挥健康作用的剂量不同[2-3]。

对于同一益生菌菌株而言，在一定范围内，高剂量的效果优于低剂量，但也不是剂量越高越好。对于不同菌株的益生菌，由于发挥健康作用的剂量不同，因此不宜通过比较活菌数来衡量其益生效果优劣[17]，还是应该以临床证据为准。

Misconception 6:
More Live Microorganisms Means Better Probiotic Effect.

The effect of probiotics is related to the dosage and should be based on the clinical evidence. Only taking enough probiotics can result in the corresponding effect, but different strains need different dosages to confer their health benefits[2-3].

For the same probiotic strain, higher dosage provides better effect than lower dosage within a certain range. Different dosages are needed for certain health benefit delivered by different strains, so it is not appropriate to compare the probiotic effects of different microorganisms[17].

误区 7：
菌株种类越多，效果越好

从目前的科研证据来看，不同菌株之间可能产生协同增效作用，但并不是所有菌株组合都具有这种效果[18]。因此益生菌产品中含有的菌株种类多少与其效果并没有必然联系，多种菌株优化搭配方式还有待进一步深入研究。

Misconception 7:
More Strain Species Means Better Effect.

According to current scientific evidence, there may be synergistic effect among different strains, but not all combinations work[18]. Therefore, the number of strain species in the probiotic products is not necessarily related to their effects. The optimal combinations of various strains should be further explored.

误区 8：
经常吃益生菌会产生依赖性

经过严格科学评价的益生菌菌株对正常人是安全的[19-20]，正常服用不会使人体产生依赖性。益生菌是一类活的微生物，补充的益生菌将会与人体肠道菌群彼此相互协助，互利共生。目前，没有任何研究证明长期食用益生菌会使肠道丧失自身繁殖有益菌的能力，或使人产生依赖性。

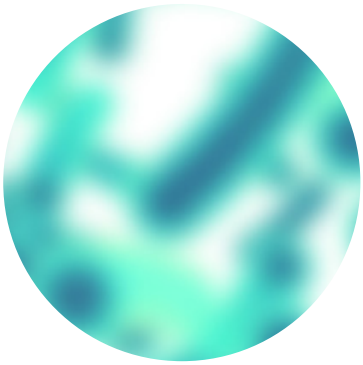
Misconception 8:
Consuming Probiotics Regularly may Result in Dependence.

Probiotics are a group of live microorganisms, while the supplemented probiotics and existing gut microbiota are working together. The normal consumption of probiotic strains which have been evaluated strictly and scientifically are safe for healthy people[19-20]. At present, there is no proven evidence that long-term consumption of probiotics may affect the reproduction of beneficial microorganisms in the gut, or make human body become dependent on them.

误区 9：
益生菌的作用具有人种差异性

益生菌的作用不会因为人种不同而不同。

影响人体肠道菌群的主要因素是饮食[21-22]和环境[23]，全球各地人群的肠道菌群组成上会存在一定差异，但肠道菌群在人体代谢中发挥的作用不会因为人群种族、年龄等因素产生显著差异[24]，目前也没有发现益生菌的作用会因为人种不同而出现明显差异。



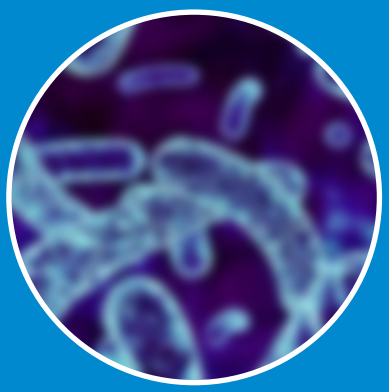
Misconception 9: The Functions of Probiotics are Race Specific.

The main factors affecting the gut microbiota are diet[21-22] and environment[23]. Although there may be some differences in the composition of gut microbiota among people around the world, their functions in human metabolism are not significantly different by race, age and other factors[24]. So far, no significant difference has been found in probiotic effects on different races.

误区 10：益生菌包治百病

目前大多数科学家认为，益生菌能够调节肠道菌群[25-27]，促进营养物质在肠道内的消化、吸收和代谢[28-31]，有益人体健康。

益生菌在临床上已经有一些应用，也取得了不错的效果，如在调节免疫[32]、预防和降低儿童腹泻风险和缩短持续时间[33-39]、改善便秘[37,38,]、减轻肠炎症状[35，36，40]、改善过敏[41]和有助于体重控制[42-43]等方面。但某些科研文章报道的益生菌功能，尚处于细胞或动物实验阶段，还未经过高等级临床证据证明。同时，由于菌株特异性及个体差异性等影响[44-48]，益生菌的应用和推荐还需要进一步研究证据支撑[49-51]。



Misconception 10: Probiotics Cure All Diseases.

Currently, most scientists believe that probiotics can regulate gut microbiota[25-27], and promote the digestion, absorption and metabolism of nutrients in the intestinal tract [28-31], which is beneficial to human health.

Probiotics have been used in some clinical practices and achieved good results, such as regulating immunity[32], preventing and reducing the risk and duration of acute diarrhea of children[33-39], relieving constipation[37,38,], enteritis symptoms[35，36，40], allergic symptoms[41], weight control[42-43] and others. However, the functions of probiotics reported in some research articles are still in the stage of cell or animal studies, which have not been proved by high-level clinical evidence. What’ s more, due to the strain specificity and individual differences[44-48], the application and recommendation of probiotics needs more support of further studies.[49-51].

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