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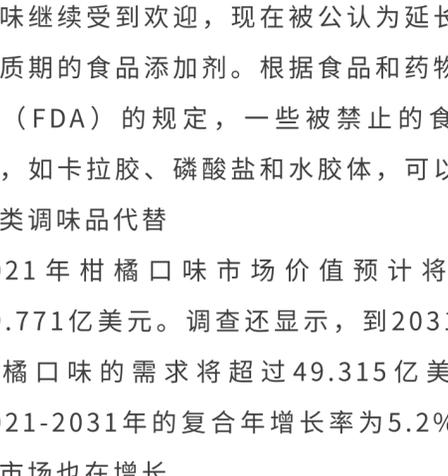
未来视野

天然柑橘口味

上海九橙实业有限公司 SHCITRIS

FUTURE INSIGHTS NATURAL CITRUS FLAVOURS

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Citrus oils, which include orange, lemon, lime, grapefruit, mandarin, tangerine, bergamot, and yuzu, are the largest group of essential oils used in the flavour and fragrance industry. In recent years citrus flavours have continued to gain popularity and are now recognised as a food additive to extend the shelf life of food products. Under Food and Drug Administration (FDA) regulations, some prohibited food ingredients such as carrageenan, phosphates & hydrocolloids can be substituted with citrus flavourings.

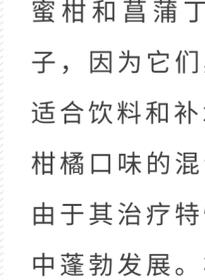
Citrus flavour market worth is expected to total US\$ 2,977.1 million in 2021. The survey also shows the demand of citrus flavourings will exceed US\$ 4,931.5 million by 2031, growing at a CAGR of 5.2% for 2021-2031. The Asian market is also on the rise.

柑橘油，包括橘子、柠檬、酸橙、葡萄柚、柑橘、柑桔、佛手柑和柚子，是香料和香料行业中使用的最大的精油组。近年来，柑橘口味继续受到欢迎，现在被公认为延长食品保质期的食品添加剂。根据食品和药物管理局（FDA）的规定，一些被禁止的食品成分，如卡拉胶、磷酸盐和水胶体，可以用柑橘类调味品代替

2021年柑橘口味市场价值预计将达到29.771亿美元。调查还显示，到2031年，柑橘口味的需求将超过49.315亿美元，2021-2031年的复合年增长率为5.2%。亚洲市场也在增长

全球天然香料市场分为北美、欧洲、亚太、南美、中东和非洲。2018年，由于含有浆果和柑橘等天然成分的即饮（RTD）水果饮料的高消费量，欧洲占据了主要市场份额

The global natural flavour market is segmented into North America, Europe, Asia Pacific, South America, and the Middle East Africa. In 2018 Europe accounted for the major market share owing to the high consumption of ready-to-drink (RTD) fruit beverages containing natural ingredients such as berries and citrus.



Citrus flavourings are high in demand for bakery, confectionery, beverages, nutraceutical, shisha and many more. They impart refreshing, tangy and juicy notes with partial alpha profiles. The trend of consuming naturally flavoured cookies, ice creams, and pastries has gained momentum in recent years. The preparation of fruit cakes has also changed as natural flavours of various fruits are readily available across the market. Unique citrus flavours are linked to providing freshness to the younger generation which is looking beyond the traditional lemon, lime and orange. "Different combinations of Navel orange, Moro blood orange, bergamot, Meyer lemon, Pomelo, red grapefruit, satsuma and calamondin are some of the examples for beverages as they have a juicy and balanced sweet and tart taste which is suitable for beverages and tonic water".

Citrus flavour blends such as lemon with the combination of ginseng is blooming in soft drinks throughout the European market due to its therapeutic properties. Another combination of citrus flavour with mint is a unique choice for candies and confectionery while citrus-infused beer with lemon, lime and zesty grapefruit is very common in alcoholic beverages.

Similarly, Mintel's March 2020 report titled "Trending flavours and ingredients in non-alcoholic beverages US" confirms that citrus is the top preferred flavour.

This report also states that although conventional citrus flavours such as orange and lemon trended down from 2018 to 2019, citrus is still the No.1 preferred flavour for non-alcoholic beverages around the world.

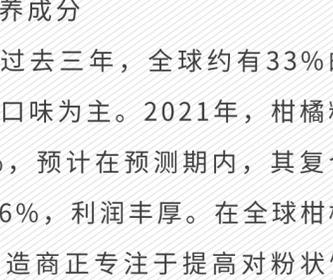
柑橘调味品在面包店、糖果店、饮料、营养品、什刹等行业的需求量很大。它们赋予人清爽、辛辣和多汁的味道，带有部分水的味道。近年来，食用天然口味饼干、冰淇淋和糕点的趋势越来越流行。水果蛋糕的制作也发生了变化，因为各种水果的天然风味在市场上随处可见。独特的柑橘口味与为年轻一代提供新鲜感有关，而年轻一代正在超越传统的柠檬、酸橙和橙子。“脐橙、莫罗血橙、佛手柑、梅耶柠檬、柚子、红葡萄柚、蜜柑和葛蒲丁的不同组合是饮料的一些例子，因为它们具有多汁、平衡的甜酸口味，适合饮料和补水”

柑橘口味的混合物，如柠檬和人参的组合，由于其治疗特性，在整个欧洲市场的软饮料中蓬勃发展。柑橘味和薄荷味的另一种组合是糖果和糖果的独特选择，而柑橘汁啤酒、柠檬、酸橙和西柚味在酒精饮料中很常见

同样，Mintel 2020年3月的报告《美国非酒精饮料中的口味和成分趋势》证实柑橘是首选口味。该报告还指出，尽管从2018年到2019年，柑橘和柠檬等传统柑橘口味呈下降趋势，但柑橘仍然是全球非酒精饮料的首选口味

Natural flavourings refer to essential oils, oleoresins, essence or extractive, protein hydrolysate, distillate, or any product which contains the flavouring constituents derived from fruits, vegetables, edible yeast, herb, root, leaf or similar plant material, meat, seafood, poultry, eggs, dairy products, or other fermented foods. Natural flavours are typically used in food and beverages in order to enhance the taste and improve the quality of the products.

However, the high costs associated with natural flavour raw materials are restraining the adoption of natural flavours. The seasonal availability of natural sources which is a crucial factor for the extraction of natural flavours is also one of the factors limiting market growth. In citrus flavours, some polar components categorised under esters, aldehydes, oxides and alcohols contribute a major role to their aroma. Octanoic and decanoic acids contribute to a complex interaction of components towards natural citrus odour. Some citrus oils can be used in making natural citrus flavours such as yuzu, finger lime, gongdhoraj, blood orange, kumquat, kaffir lime, mandarin for their appealing pulp and fragrant aroma especially for beverages. For instance, blood orange is a rising star citrus flavour in the food and beverage industry due to its anti-inflammatory properties.



Beverage application will account for more than 55% of the market value, growing at CAGR of 7.2% in the forecast period. Citrus flavours are frequently perceived favourably by consumers and can impart a nutrient-rich profile in products such as electrolyte drinks, soft drinks, infused tea, and more.

Approximately 33% of all new flavoured beverages established globally in the last three years featured citrus flavours. The powder form of citrus accounted for the maximum share of nearly 58% in 2021 and is also expected to witness a lucrative growth rate of 5.6% CAGR over the forecast period. Manufacturers operating in the global citrus flavour market are focusing on building awareness about powdered beverages, driving growth in the global market.

天然香料是指精油、油树脂、香精或提取物、蛋白质水解物、蒸馏物或含有来自水果、蔬菜、食用酵母、草本植物、根、叶或类似植物材料、肉类、海鲜、家禽、鸡蛋、乳制品或其他发酵食品的香料成分的任何产品。天然香料通常用于食品和饮料中，以提高产品的口感和质量。

然而，与天然香料原料相关的高成本限制了天然香料的采用。自然资源的季节性可用性是提取天然香料的关键因素，也是限制市场增长的因素之一。在柑橘口味中，一些极性成分被归类为酯类、醛类、氧化物和醇类，对其香气起主要作用。辛酸和癸酸有助于成分对天然柑橘气味的复杂相互作用。一些柑橘油可用于制作天然柑橘口味，如玉祖、手指青柠、贡多拉吉、血橙、金桔、卡菲尔青柠和柑橘，因为它们具有诱人的果肉和芳香，尤其适用于饮料。

例如，血橙由于其抗炎特性，在食品和饮料行业中是一种新兴的柑橘口味。饮料应用将占市场价值的55%以上，在预测期内以7.2%的复合年增长率增长。柑橘口味经常受到消费者的青睐，并能在电解质饮料、软饮料、泡茶等产品中赋予丰富的营养成分

根据FMI的数据，过去三年，全球约有33%的新口味饮料以柑橘口味为主。2021年，柑橘粉占最大份额近58%，预计在预测期内，其复合年增长率将达到5.6%，利润丰厚。在全球柑橘香精市场运营的制造商正专注于提高对粉状饮料的认识，推动全球市场的增长

Furthermore, some challenges are associated with citrus and natural flavours such as solubility, stability, and strength during formulation. "Simple, natural and no preservative beverage formulations can undergo some challenges when working with lemon concentrates and flavours", Angelich explains. Natural lemon and other citrus flavour ingredients can oxidise during a beverage's shelf life and result in undesirable off notes and soapy tastes. Product formulators need to carefully balance yeast processing conditions, what flavour materials, preservation means, and shelf-life expectations they can balance and deploy to create fresh and natural-tasting lemon and citrus beverages.

Compound terpenes, specifically citral, are primary flavour and aroma constituents in lemon oil and lemon flavour, as are the major chemical terpenoid components, including D-limonene, gamma-terpinene, alpha and beta pinenes. However, Conch Meyer notes, "the high level of unsaturated fats and oxygenated functionalised compounds in citrus oil, specifically, make terpenoids highly susceptible to oxidation".

Changes in citrus peel oil constituents from such chemical reactions as oxidation have long been known to alter flavour in citrus oil and juice, especially during storage. Oxidation is not only influenced by the presence of oxygen but also by temperature, UV radiation and trace metals that can act as a catalyst.

Try to replace the air in the container with nitrogen or fill the container to the brim without any air gap, tightly cap it, seal it, if possible, store it in the refrigerator. These procedures prolong the shelf life of citrus peel essential oil. Make sure no traces of moisture remain in the essential oil before storing it.

Day by day, millions of consumers are moving towards citrus beverages due to their nutritional and therapeutic properties along with their commercial aspects. There is no doubt that the diversity and quantities of citrus fruits available throughout the world in such a wide variety of forms and flavours will ensure the continued growth in their demand and end-uses.

此外，一些挑战与柑橘和天然香料有关，如在配方过程中的溶解度、稳定性和强度。Angelich解释道：“简单、天然、无防腐剂的饮料配方在使用柠檬浓缩物和调味品时会遇到一些挑战。”天然柠檬和其他柑橘口味的成分和成分会在饮料的保质期内氧化，导致不受欢迎的异味和肥皂味。产品配方师需要仔细平衡什么样的加工条件、什么样的风味材料、保存方法以及他们可以平衡和使用的保质期期望，以生产新鲜和天然的测试柠檬和柑橘类饮料

复合萜烯，特别是柠檬醛，是柠檬油和柠檬香精中的主要风味和香气成分，也是主要的化学萜类成分，包括D-柠檬烯、γ-萜烯、α-和β-蒎烯。然而，Conch Meyer指出，“特别是柑橘油中高含量的不饱和脂肪和含氧官能化合物使萜类化合物极易被氧化”

众所周知，柑橘皮油成分因氧化等化学反应而发生的变化会改变柑橘油和果汁的风味，尤其是在储存期间。氧化不仅受氧的存在影响，还受温度、紫外线辐射和可作为催化剂的微量金属的影响

尝试用氮气替换容器中的空气，或将容器充满到边缘，不留任何气隙，盖上盖子，密封，如果可能，将其储存在冰箱中。这些程序延长了柑橘皮精油的保质期。在储存精油之前，确保精油中没有水分残留

每天，由于柑橘类饮料的营养和治疗特性以及商业方面，数百万消费者正转向柑橘饮料。毫无疑问，世界各地柑橘类水果的多样性和数量，种类繁多，口味多样，将确保其需求和最终用途的持续增长



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