WHITE PAPER

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FOSLIFE

The Sweet Soluble Prebiotic Fiber

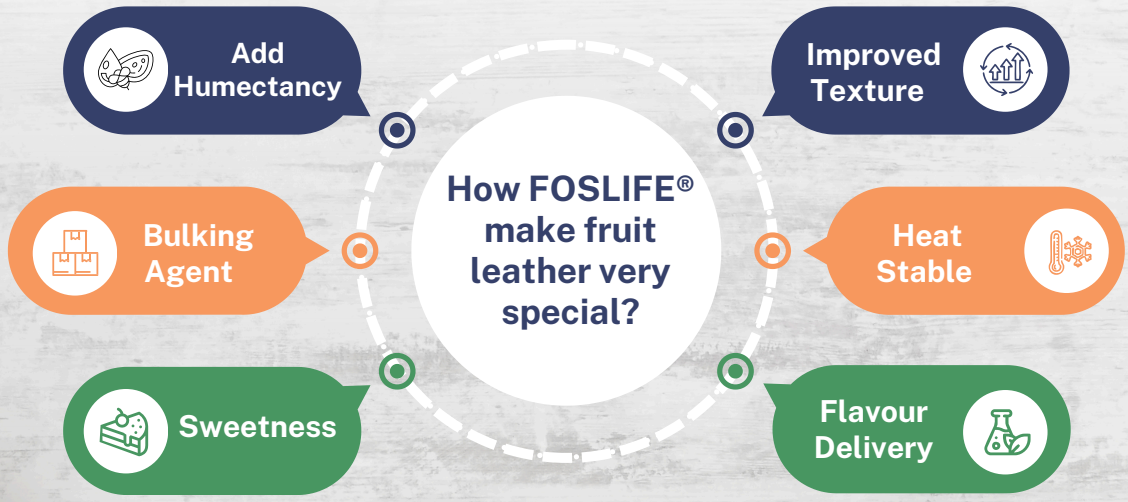
FRUIT LEATHER REFORMULATION WITH FOSLIFE® FOR HEALTHY SNACKING

INTRODUCTION

Fruit leather, a self-stable confection with a gel-like texture, provides extended shelf life without refrigeration. Crafted from fruit puree, these bars are rich in nutrients, offering a convenient, flavorful, and health-conscious snacking alternative. However, conventional fruit leathers, high in sugar and concentrated calories, may not align with the preferences of health-conscious individuals, given the current emphasis on the intricate link between diet and metabolic health. The prevalence of calorie-dense, processed foods in contemporary culture, coupled with sedentary lifestyles, contributes to rising concerns about obesity and diabetes risk, emphasizing the importance of mindful dietary choices.

Sugar replacement is a complex challenge due to its pivotal roles in taste, texture, and overall product attributes, requiring careful consideration to find suitable alternatives. The common sweeteners available in the market often fall short in delivering the same quality to products. Short-chain fructooligosaccharides serve as a healthy sugar alternative. Derived from natural sources, it provides sweetness with a lower caloric impact and acts as a prebiotic, supporting gut health. scFOS is gaining recognition as a viable option for those seeking a health-conscious substitute for traditional sugar.

FOSLIFE® is a short-chain fructooligosaccharides derived from cane sugar by Revelations Biotech Pvt Ltd that transforms food products with delightful sweetness and enhanced health benefits as a sugar substitute. It not only addresses excessive sugar intake concerns but also enhances health benefits, maintaining product integrity and offering guilt-free indulgence for health-conscious consumers.



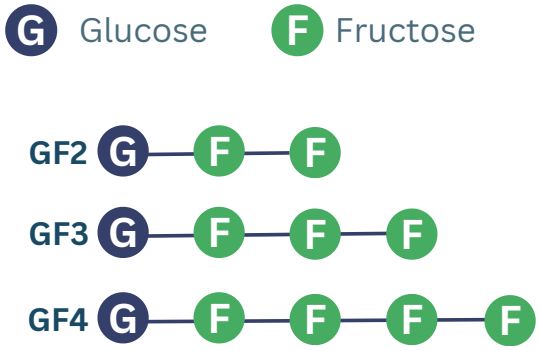


Fig 1 : Short-chain fructooligosaccharides (scFOS)

FOSLIFE® is a prebiotic sweet soluble fiber obtained by an enzymatic transformation of sucrose that has a clean taste, rapid onset of sweetness, no lingering, and no aftertaste consisting of a chain of glucose and fructose.

The functionality offered by FOSLIFE® in formulating fruit leather

"A 180-day comparative study was carried out to assess the effect of FOSLIFE® as a sugar replacer on the properties of fruit leather and the stability of short-chain fructooligosaccharides (scFOS)."

THE STUDY

A control formulation of fruit leather was prepared using mixed fruit pulp (Apple (28%) , Papaya (22%) ,Guava (22%) , Banana (16%) , and orange (11%)) and sugar solids in a 65:35 ratio. FOSLIFE® L-65 replaced 100% of the sugar solids on a dry basis. The mixture was cooked with continuous stirring until the total soluble solids reached 40°Bx, and the acidity was adjusted to 0.3%. To prevent the growth of undesirable microorganisms during storage, sodium benzoate was added at 600 ppm.

The mixtures were then spread on trays at 250g/sq. ft. and dried in a tray drier at 55 ± 5°C until achieving a moisture content of 16±2%. The dried sheets were cut into 3.5x7.5 cm rectangular slabs and equalized in airtight plastic boxes overnight. Yield data for fruit leathers were recorded. Subsequently, the mixed fruit bar samples underwent an extensive 180-day study at ambient temperature, evaluating sensory aspects, physicochemical qualities, and the stability of short-chain fructooligosaccharides (scFOS).

THE STUDY OUTCOME

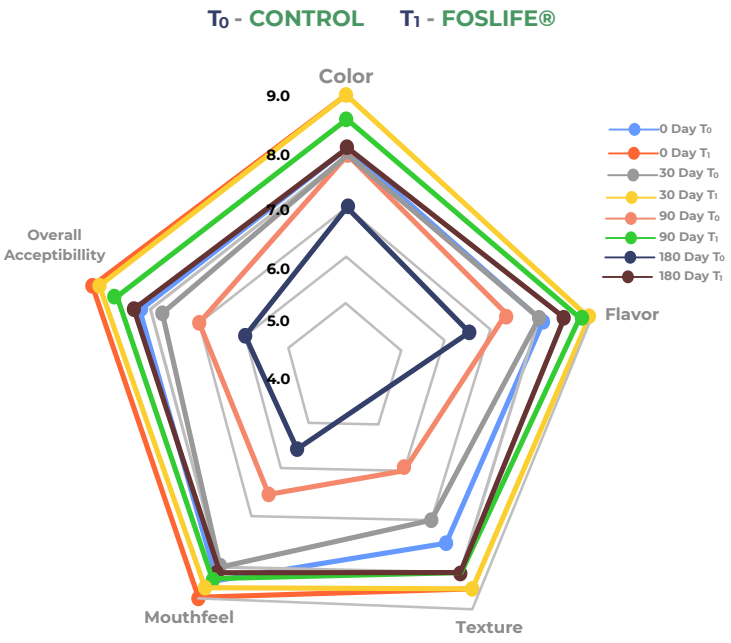


Fig 2 : Sensory qualities of Mixed Fruit Leather

Sensory Qualities

Semi-trained panelists assessed mixed fruit leather for color, flavor, texture, mouthfeel, and overall acceptability. No significant differences were noted in color and flavor between the samples. However, mixed fruit leather with FOSLIFE® received higher preferences for texture, mouthfeel, and overall acceptability.

Notably, crystallization manifested after two months was observed in the control sample (Fig 3). This undesirable crystallization phenomenon, known to compromise the sensory quality of stored products, was notably absent in the mixed fruit leather prepared with FOSLIFE®. The exceptional anti-crystallization property inherent in FOSLIFE®, coupled with its remarkable water-retaining ability, played a pivotal role in averting the crystallization process. This underscores FOSLIFE®'s efficacy not only in maintaining superior textural quality but also in enhancing the overall shelf stability of the fruit leather.

Fig 3 : Mixed Fruit Leather samples

Acidity and PH

The acidity of both mixed fruit leather samples was maintained at 0.3% as per formulation. Samples were stored in airtight containers at ambient temperature for 180 days and assessed for changes in acidity and pH to understand the impact of FOSLIFE® at 30-day intervals up to 180 days.

During this period, it was noted that there were non-significant changes in the acidity and pH of both Mixed fruit leather samples containing sugar (T_0) and FOSLIFE® (T_1). The acidity levels for the control (T_0) and sugar-replaced (T_1) samples remained in the range of 0.31-0.34 and 0.31-0.35, respectively. Additionally, pH values were within the range of 3.38-3.5 for the control sample and 3.46-3.52 for the sample containing FOSLIFE® during the entire storage. This indicates that replacing sugar with FOSLIFE® did not lead to any notable changes in these parameters.

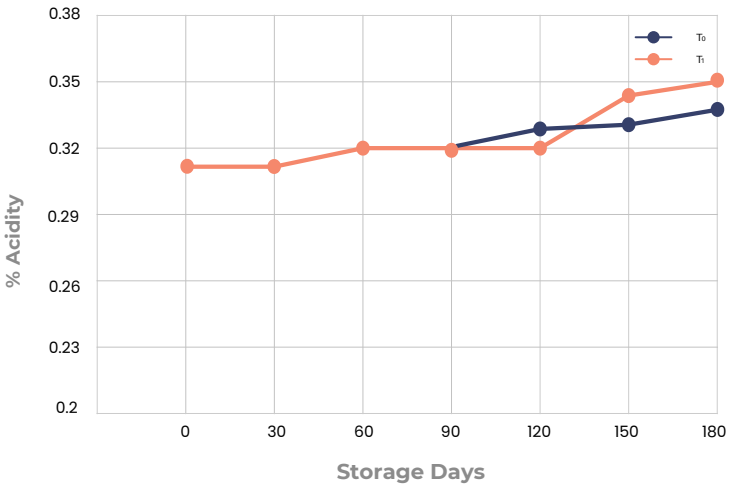


Fig 4 : Acidity of Mixed fruit leather during 180 storage at ambient temperature

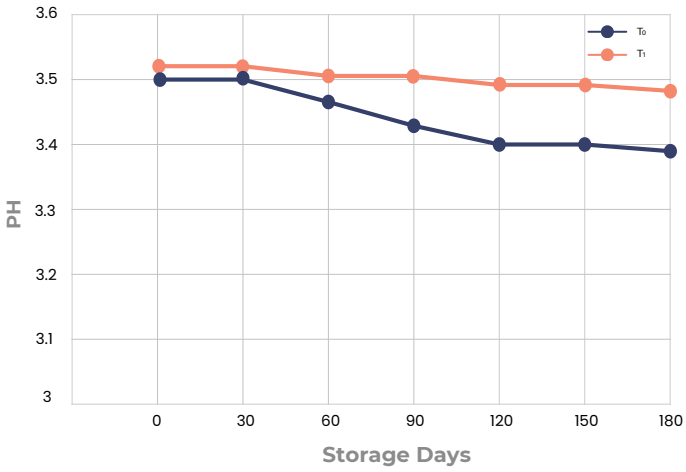


Fig 5 : pH of Mixed fruit leather during 180 storage at ambient temperature

Stability of short-chain fructooligosaccharides

Throughout the storage period, the fructo-oligosaccharides (FOS) content in Mixed fruit leather (T_1) was assessed at 30-day intervals using HPLC, with the determination based on the area under the curve of the FOS standard compared to the sample.

Remarkably, throughout the entire storage duration, fructooligosaccharides exhibited stability, with the retention of FOS exceeding an impressive 90%. This indicates that FOS remains stable in Mixed Fruit Leather at an acidic pH of 3.4-3.5 for a period of 6 months when stored at ambient temperature.

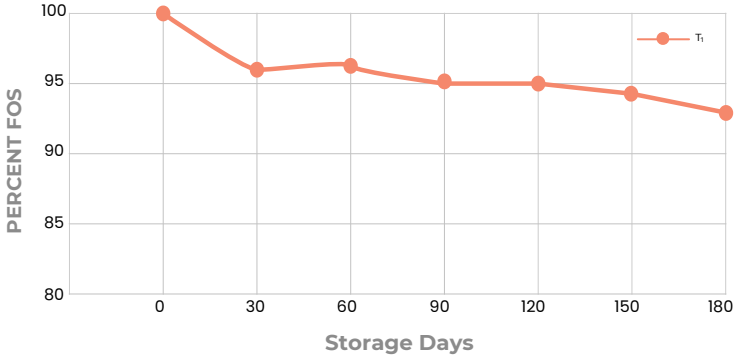


Fig 6 : Stability of short-chain fructooligosaccharide

SUMMARY

FOSLIFE® goes beyond sugar replacement; it acts as a versatile functional ingredient, functioning as a prebiotic dietary fiber for gut health improvement. The incorporation of FOSLIFE® in fruit leather not only serves as a commendable sugar replacement but also introduces versatile functional benefits. The 180-day study demonstrated that FOSLIFE® enhances texture, prevents crystallization, and maintains overall product stability, addressing common challenges associated with traditional fruit leathers. Its stability at an acidic pH of 3.4-3.5 for six months further underscores its efficacy. FOSLIFE® emerges as a unique and satisfying choice, offering both indulgence and health-conscious options in the realm of innovative and nutritious snacking.

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