

Health benefits of “alternative” ingredients for people with different dietary lifestyles

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1. Introduction

An individual will make changes to his or her diet because of a medical diagnoses or self-reported symptoms after the ingestion of food items. The market is overflowing with possible solutions for people who choose certain dietary lifestyles, but consumers are not always educated enough to know if these products are appropriate and effective.

Sublime With Lime is a newcomer in the health market and determined to make science-based products that serve their consumer’s needs. All their products are gluten-free, wheat-free, dairy-free, refined sugar free, non-GMO, preservative free, natural, and wholesome.

Although **Sublime With Lime** is working hard to make healthy-eating affordable, ingredients for healthier products tend to be more expensive and if a consumer is going to pay a little extra, they need to know that the foods they have chosen will help them accomplish their lifestyle objectives.

Here is a summary of the type of lifestyles Sublime With Lime would like to support and how their products help them achieve just that.

2. General health and wellbeing

If one considers the high prevalence of obesity and lifestyle diseases in the world the growing market and consumer interest in healthy lifestyle and the accompanying products comes as a surprise. The pace at which many households run make it challenging to live the healthy lifestyle that many people intend to, urging them to look for convenient solutions. The question then stands: what does a healthy lifestyle look like? Adequate water consumption, balanced macronutrients, sufficient micronutrients intake and enough physical activity to maintain healthy muscle and fat composition might be overly simplified.

Processed food can be any natural food that has undergone freezing, canning, baking, or drying. Consider the difference between a ripe tomato vs tomato powder. The fresh product still has most of its nutrients and natural antioxidant colourants whereas powdered tomato will have been stripped of most of the nutritious content and contain added additives, salt, fat and sugar to make up for the taste. Artificial colourants will be added to make up for the loss in natural colour and preservatives will make it last longer on the shelves. Store bought foods can vary in its degree of processed state, which can make choosing the healthier option challenging by posing the question “how healthy is it really”? On the other hand marginally processed foods can serve as great companions to cooking and baking with unprocessed fresh products, making the consumption of unprocessed foods an appetizing experience. Consider the *Chocolate Fudge Brownie* from Sublime With Lime. The dates, cacao, peanuts, and chocolate have all been exposed to different processing methods, but it has been done in a way that still maintains many of the ingredient’s nutrients. The dates still maintain many of its natural sugars (fructose & glucose) making the addition of extra sugar to the recipe unnecessary. Opposed to processed white sugar which contain barely any nutrients, dates are a major source of the minerals selenium, copper, potassium and magnesium. You can get a good dose of various B vitamins and vitamin C from dates not to mention the insoluble fiber which is valuable to the gut microbiome. The phenolics in dates perform antioxidant and anti-

inflammatory functions in the intestinal tract walls (Alfarsi & Lee, 2008) Another example is the cacao used in Sublime With Lime products as opposed to regular cocoa used in conventional baking. The raw cacao contains more flavonoids (anti-oxidants), magnesium and soluble fiber because more of the whole bean is intact (Zy'zelewicz, et.al., 2020)

Sunflower seeds, pumpkin seeds, poppyseeds, chia seeds and flaxseeds all deserve an article of their own. Sunflower and pumpkin seeds are difficult to include in the diet as is, especially in that of children. That is what makes the products at Sublime With Lime so exciting. The sunflower seed and sprout contain valuable antioxidant, antimicrobial, anti-inflammatory, antihypertensive, wound-healing, and cardiovascular benefits found in its phenolic compounds, flavonoids, polyunsaturated fatty acids, and vitamins (Fowler, 2006). The most abundant nutrients are selenium, copper, zinc, folate and iron (Alagawany, et.al., 2015). Germination not only alters the appearance, flavour, and taste of the seed, but, more importantly, amplifies its already valuable nutritional value (Sangronis, E, et.al. 2007).

The pumpkin, from the Cucurbitaceae family, has seeds that are discarded as the by-products of food processing, but they have been discovered to contain a rich repertoire of nutrients such as proteins, unsaturated fatty acids, phenolic acids, carotenoids, tocopherol, phytosterol, squalene etc. Biological assays have proven these seed extracts to exert antioxidative, hypoglycaemic, anticancer, antihypertensive, cardioprotective, antilipemic, gyno-protective, and anthelmintic (destroys parasites) properties. Further, the seeds do not contain any major anti-nutrients. Phytoestrogens like β -sitosterol occur, which might be acting as agonists or antagonists of oestrogen and testosterone, given their validated role in genic and prostate health (Patel & Rauf, 2017)

In recent years the human microbiome has been considered the indicator of human disease and health. To put in a simple term; the microscopic creatures that live on your skin, mammary glands, seminal fluids, uterus, ovarian follicles, lung, saliva, oral mucosa, conjunctiva, biliary tract, and gastrointestinal tract. These microscopic creatures include bacteria, archaea, fungi, protists and viruses, and they co-exist with the human body without harming it, in fact it is quite the opposite. An estimated 500 – 1000 different species of bacteria live in the human body (Turnbaugh et.al., 2007). As research untangles the mysterious link between the immune system and the microbiome, in the future the way medical professionals treat disease will be more focused on DNA sequencing.

At present it seems as if the microbiome is firmly established in the first year of life, leading to a lifelong microbiome signature in individuals (Schirmer et.al, 2016). But diet still has a major impact on the gut microbiome and people who initiate the same aggressive dietary strategy will have similar gut microbiome within days. (David et.al, 2014). Antibiotics in early life have a profound effect of the gut microbiome that can result in the later development of obesity, asthma, inflammatory bowel disease and other disorders (Trasande et.al., 2005). Now that we have firmly established the importance of the microbiome in human health the next question should be obvious.

2.1 Prebiotics

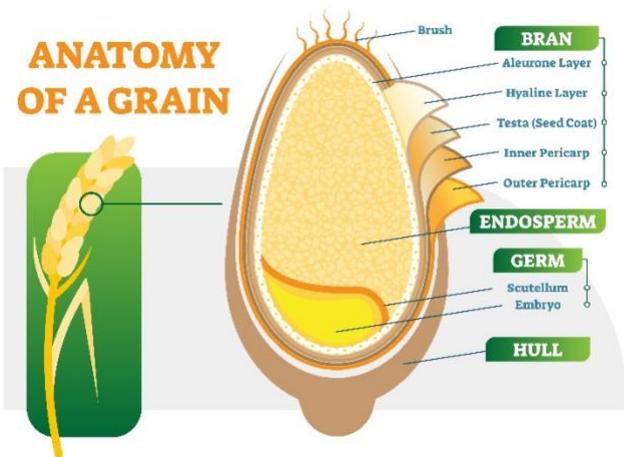
The major source of prebiotics (the energy source for the gut microbiome) is represented by fructo-oligosaccharides, lactulose galacto-oligosaccharides and trans-galacto-oligosaccharides (Devani-Davari et.al, 2019). These fibers resist gastric acidity, are fermented by intestinal flora, and stimulate the growth of intestinal bacteria associated with health and well-being (Slavin, 2013). Table 2.1.1 lays out the resistant fibers in Sublime With Lime Products.

Prebiotic	Ingredients	Sublime With Lime Products
Fructo-oligosaccharides	Raw honey	Cranberry and SuperSeed rusk
Galacto-oligosaccharides	Gluten free oats	Cranberry and SuperSeed rusk
	Flax meal flour	Cranberry and SuperSeed rusk
Resistant Starch		
	Chickpea Flour, Brown rice Flour	Cranberry and Seed Rusk
Polyphenols	Dates	Peanut butter and Date energy bites, Chocolate Fudge Brownie
	Raw Cacao	Chocolate Fudge Brownie
	Flax Meal (Flour)	Cranberry and SuperSeed Rusk

Table 2.1.1: Types of fibers in Sublime With Lime products

3. Gluten-related-disorders and Wheat Allergies

Gluten is found in wheat, rye, oats, and barley and is used in food processing to give the dough the texture, flavour and properties consumers have come to enjoy. Gluten is found in the endosperm of the grain that make up 70 – 80% of the grain. Replacing gluten has been a challenge, because the absence of gluten leads to weak cohesion and elastic doughs which result in crumbling texture, poor colour, and low specific volume (Rai, et al, 2018)



Royalty free stock vector ID: 1062944609, Grain anatomical layers vector illustration diagram with bran, endosperm, germ, and hull. Biology science poster.

People who have been diagnosed with Celiac disease live with an auto-immune disease (a disease caused by antibodies or lymphocytes produced against substances naturally present in the body) that affects the small intestine. Common signs are:

- anaemia,
- abdominal IBS-like symptoms,
- eosinophilic oesophagitis,
- neuropathy,

- ataxia,
- depression,
- short stature,
- osteomalacia,
- osteoporosis,
- various nutrient deficiencies but more particularly iron, B12, and folic acid (Tome et.al. 2019)

Celiac disease patients cannot tolerate gluten and it is important that products are labelled correctly to help these people make the correct choices.

There is also a growing trend of people who choose a gluten-free lifestyle who are not gluten sensitive because of a perceived healthier lifestyle and reported reduction in IBS-like symptoms. In this group there may be people who have the genetic markers HLA-DQ2 or DQ8 for Celiac disease, but are still asymptomatic (Rai, et.al., 2018).

Replacing gluten in gluten-free products requires utilizing a mix of recommended flours, proteins, hydrocolloids, and technologies. Sublime With Lime makes use of a gluten-free flour mix of potato flour, chickpea flour, tapioca starch, brown rice flour, white rice flour, xanthan gum in starchy products like the Cranberry & SuperSeed Rusks. This blend is also very good at mimicking the effects of gluten offering the customer an enjoyable product (Hortsmann, et.al, 2017). The potato flour offers the sticky texture like wheat products. Chickpea flour contains health benefits of the resistant starch (fiber) in legumes, which lowers the Glycaemic Index. It also has more phosphorous, magnesium and potassium than refined wheat. The gluten free oats in the Sublime With Lime’s rusk products partly address the issue of nutrient deficiency in Celiac patients by being rich in fiber, thiamine (B1), riboflavin(B2), niacin (B3), folate (B9) and iron.

Gluten free diets tend to be low in micronutrients like vit. D, Vit. B12 and folate, in addition to some minerals such as iron, zinc, magnesium and calcium (Vici, et.al., 2016). Consumers should keep in mind that starchy products are rarely consumed alone but are often used as vehicles for other highly nutritious ingredients.

Pre-germination of some of these alternative flours is an exciting development in alternative flours because it releases certain enzymes which in turn increases the antioxidant activity of the flours, even more so than conventional wheat flours. Sourdough (fermenting wheat flour) with naturally occurring lactic acid bacteria and yeasts, with 2 – 5 days of active fermentation for the development of the sourdough could bring gluten toxicity down to 12ppm. The combination of pre-germination and fermentation could be well tolerated by gluten sensitive individuals. (Rai, et al, 2018) and Sublime With Lime will continue to look out for possibilities in this area.

	Chocolate Fudge brownie	Peanut Butter & Date Energy Bites	Cranberry and Super Seed Rusk
Dried Dates	X	X	
Raw Cocoa	X		
Natural Peanut Butter	X	X	X
Coconut Oil			X
Raw Honey			X

Nutmeg			X
Flax seeds			X

Dates: High in minerals like selenium, copper, potassium and magnesium all important for the Central-nervous-system. Dates are a good source of polyphenols and carotenoids for antioxidant effect (Al-Farsi, et.al. 2008)

Raw Cocoa: Flavanols with anti-oxidant and anti-inflammatory effect (Sorrenti, et.al., 2020)

Peanut butter: Reduce cardiovascular disease (Beccera-Thomas, et.al., 2019)

Coconut oil: Improves immunity (Joshi, et.al., 2020)

Raw Honey: Polyphenols in honey may improve memory (Rahman, et.al. 2014)

Flax seeds: Improves cardiovascular health (Prasad K., 2009)

Nutmeg: Functions like aphrodisiac, antimicrobial, antioxidant and analgesic (Beckerman & Persaud, 2019)

4. Vegan, Dairy and Egg Allergies

During the last decades, plant-based and vegetarian eating patterns proven to be associated with several beneficial health outcomes have been adopted by an increasing proportion of individuals in Western societies. Veganism is characterised by a complete abstinence of consumption of meat and food of animal origin, such as dairy, eggs, and honey, with a diet consisting solely of plant foods like grains, vegetables, fruits, legumes, nuts, seeds, and vegetable fats and oils. Veganism is usually adopted as the result of ethical principles related to animal rights and welfare, since the way these products are acquired is considered violent and barbaric, but also due to spiritual, moral, and religious values, socioeconomic consideration, and environmental concerns as well, focusing on the energy and natural resources savings in food production (Sakas, et.al., 2020).

There is a concern for inadequate protein intake, because a complete protein vegan diet is dependent on variety, but it seems the plant sources that provide protein are much more beneficial for human health than animal derived protein. An example of plant-derived protein is mung bean protein may increase Bacteroidetes while decreasing Firmicutes and pea protein increases strains of Bifidobacterium and Lactobacillus (Nakantani et.al., 2018). These studies demonstrated that plant-derived protein get better benefits on gut microbiome along with positive effects on the host metabolism.

There are many reports on the health benefits of a vegan diet for metabolic syndrome, cardiovascular disease, and rheumatoid arthritis concerning relevant impacts from gut microbiota (Wong, et al., 2018). The vegan gut profile appears to be unique in several attributes, including a reduced abundance of pathobionts and a greater abundance of protective species. Reduced levels of inflammation may be the key element linking the vegan gut microbiota with protective health effects. (Glick-Bauer & Yeh, 2014)

Chickpea flour used in Sublime With Lime baking products has double the amount of protein than regular whole wheat products. (Singh, 2017) The vegan buttermilk and flax "egg" make the Cranberry & SuperSeed rusk an ideal teatime snack.

5. Conclusion

As research continues to uncover new information Sublime with Lime continues to develop products that make transitioning and the long-term compliance to these lifestyles achievable. There is a gap in the market for low FODMAP products for IBS patients and Sublime is continuously looking into developing more products in this area. Below is a table that concludes the Sublime with Lime Products and their science-based suitability to the various lifestyles.

	General Health	Diabetes	Gluten related disorders and Celiac disease	Veganism, egg and dairy allergies	IBS
Health by chocolate brownie		Dates as a low GI natural sugar (1). Raw cacao for antioxidant effect (2)	No wheat and dates provide a good source of fiber and copper and B Vitamin (1) Raw cacao for reduces gut inflammation (2)	Dates as a source of energy and a bit of calcium (1) and no animal products included in dark chocolate.	N/A
Health by Chocolate Brownie application	Enjoy as a dessert 1 – 2 times a week.				N/A
Peanut butter & date energy bites	Dates provide healthy digestion (4) dates include flavonoids, carotenoids, and phenolic acids, which have been studied for their anti-inflammatory, anticancer, and brain-protective properties (5). Dark chocolate is a source of iron, magnesium, copper and manganese and some studies show improved brain function(6)	Dates and dark chocolate reduce cardiovascular risks (3, 6) Dark chocolate can improve blood flow and lower blood pressure (6). Peanut butter is an ideal low carbohydrate ingredient and the oleic acid in peanuts improve insulin sensitivity (7, 8) and the resveratrol in peanuts may reduce heart disease (9)	Dark chocolate has extremely high antioxidant effect which could protect gut health (6)	Dark chocolate is a source of iron, which could be lacking in a vegan diet. (6) Compared to other plant sources peanut butter has a high protein content (7) and has a high Vitamin E and B3 and B6 content (8).	N/A
Peanut butter & date energy bites	Use as an afternoon snack to carry energy levels to supper and avoid binge eating in between work and supper.	Use as a pre-workout snack	Use as an on-the-run snack when reliable sources are not around.	Use as an on-the-run snack when reliable sources are not around.	N/A
Cranberry & Seed Rusks	The lauric acid in coconut oil kills harmful pathogens, such as bacteria, viruses, and fungi (11) Oats is a source of magnesium often lacking in the diet (18). Cranberries is none for its Vitamin C content and quercetin the most abundant antioxidant.(21) which protects against viral infections (22).	Coconut oil encourages fat burning and is an excellent source of energy for the brain because of the MCT fat content (10) and raises HDL cholesterol (12) Avenathramides. Only found in oats, are a family of powerful antioxidants and may reduce inflammation in your arteries and regulate blood pressure (19) Beta glucans, the soluble fibers from oats, have demonstrated benefits for blood sugar control (20)	Studies show that moderate to large amounts of oats is well tolerated by patients with celiac disease (21)	Oats is a high protein grain (17)	N/A
Cranberry & Seed Rusks	Use as an early morning breakfast if you are a person that has limited appetite in the morning	Can be used as a late night snack to avoid nocturnal hypoglycaemia	Take with to tea-time events if you are worried that there won't be catering for your lifestyle	Use as an early morning breakfast if you are a person that has limited appetite in the morning	N/A

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