



GUIDE TO
SUSTAINABLE
MENUS



A guide to sustainable menus

A step by step approach
to sustainability



NOURISH
The future of food
in health care.

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Chapter 11

Choosing your sustainable supplements

1

Sustainable supplements

Why consume supplements?

Supplements are used in special situations where clients cannot consume the quantity or type of food needed to provide sufficient calories or sufficient quantities of a particular nutrient (for example, liquid-only diets or malnourished clientele).

What are sustainable supplements?

Supplements are never the most sustainable choice. Homemade enrichment in normal food is the most sustainable option to choose. However, when commercial supplements are needed, their sustainability can be determined from the ingredients and packaging. Sustainable supplements contain ingredients which are environmentally friendly and ethically produced.

What is the impact of sustainable supplements on health?

Ideally, supplements are unnecessary, with complete nutrition being obtained from the consumption of whole foods. However, sustainable supplements fulfill nutritional needs as necessary.



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Making sustainable supplement choices

Create homemade supplementation

Making your own supplements is easy and cost-effective and is the most sustainable option. If a client is eating food but needs supplementation because the quality or the quantity is not enough, here are some tips to increase nutritional value.

Type of food	Type of enrichment	Examples
<ul style="list-style-type: none"> • Soups (broth, cream) See Chapter 7 for sustainable choices. • Pureed starches, vegetables, or fruits See the Chapter 5 for sustainable choices. See Chapter 6 for sustainable choices. See Chapter 8 for sustainable choices. • Homemade baked goods (bread, muffin, cookies) See the Chapter 5 for sustainable choices. See Chapter 8 for sustainable choices. • Hot cereals See the Chapter 5 for sustainable choices. • Hot beverages See the Chapter 10 for sustainable choices. • Smoothies and juice See the Chapter 10 for sustainable choices. • Sauces See Chapter 9 for sustainable choices. 	<p>See the appendix for more information on each ingredient.</p> <ul style="list-style-type: none"> • Vitamins and minerals <ul style="list-style-type: none"> · Nutritional yeast · Miso • Protein <ul style="list-style-type: none"> · Cricket flour · Legume flour · Soy protein isolate · Whey powder · Skim milk powder • Fat <ul style="list-style-type: none"> · Nut butter · Oils · Margarine · Butter • Sweetener <ul style="list-style-type: none"> · Sugar syrup (honey, agave) · White sugar · Brown sugar 	<ul style="list-style-type: none"> • Vitamins and minerals <ul style="list-style-type: none"> · Sprinkle nutritional yeast on foods as you would sprinkle salt. <ul style="list-style-type: none"> – Use 1 tbsp nutritional yeast for 3 cups of popcorn – Use 2-3 tbsp nutritional yeast to sprinkle on 5 cups of roasted vegetables • Soups, broths, and sauces can be made with miso paste. <ul style="list-style-type: none"> · Add miso (around 1 teaspoon per portion) to your soup, broth, or sauces at the end of the cooking (probiotics in miso would be killed by boiling water). • Protein <ul style="list-style-type: none"> · Cream soups can be enhanced with whey or skim milk powder. · Baked goods, such as cookies, muffins, and bread, can be enhanced with cricket or legume flour. <ul style="list-style-type: none"> – Use half regular flour and half insect or legume flour in your recipes. · Oatmeal can be enriched with skim milk powder. • Fat <ul style="list-style-type: none"> · Puree fruit with nut butters and oils. · Oatmeal can be flavoured with nut butter. • Sweetener <ul style="list-style-type: none"> · Oatmeal can be flavoured with honey.

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Choose commercial supplements

There are different type of supplements to choose from once an evaluation of needs has been completed by a professional dietitian. Supplementation can be used to manage various health conditions such as diabetes or renal disease, to increase nutrient intake or as part of hydration. Here are some concepts that can contribute to making sustainable supplement choices.

Tips for choosing ingredients

Choose organic.

Organic ingredients are produced without the use of synthetic pesticides.

- **When possible, choose the source of protein according to its sustainability ranking**
(See Chapter 4 for the sustainability ranking and more information)
 - learn about the following possible sources that are often used in commercial supplements (not listed in order of sustainability).
- **Soy protein isolate is produced by extracting and heating soybeans to produce a protein isolate powder.**
 - Heating is a particularly energy-intensive step of this process and can lead to an environmental impact greater than or equal to that of animal protein equivalents.²⁸⁷
 - Technology such as waste-heat recovery²⁸⁸ can reduce the energy, cost, and environmental impact.
 - According to the AFSSA, the overconsumption of soy protein isolate (isoflavone) may have a negative estrogenic interaction particularly for pregnant women and children before 3 years old who should avoid those product.
- **Soy lecithin is a by-product of soybean oil production. It is often used in nutritional supplements because of its rich unsaturated fatty acid content and phosphorus, as well as emulsifying and antioxidant properties.²⁸⁹**
 - The process of making lecithin from oil is called degumming. Citric and phosphoric acid must be used and may leach into wastewater, although new technology using enzymes is emerging to prevent the production of harmful effluent.²⁹⁰
- **Whey, whey protein isolate, and whey protein concentrate are by-products of cheese production.**
 - They were highly polluting waste products²⁹¹ until it was realized that they could provide a good source of protein. However, post-treatment, condensate of whey (also known as COW water) is still a pollutant, since it contains over 75% lactose.²⁹² Technology is slowly advancing to transform this waste into potable water²⁹³ and to produce lactose-free whey.²⁹⁴
- **Milk protein, milk protein concentrate, milk protein isolate are made from concentrating liquid milk. They are similar in nutritional protein profile to whey, except that whey does not contain casein.²⁹⁵**
- **Partially hydrolyzed milk protein, protein hydrolysate, often found in baby formulas, have been subjected to hydrolysis, a process that increases digestibility by breaking down the protein.²⁹⁶**
- **When possible, choose sweeteners in accordance with the information on sustainable sweeteners in Chapter 9.**
 - **Artificial sweeteners** may not be fully metabolized by the body and leach into the environment through wastewater.
 - **Corn syrup solids and maltodextrin, fructose, dextrose** are all sugars made from corn.
 - Corn syrup production is energy-intensive. In contrast, other sweeteners have nutritional benefits and less of an environmental impact.
- **When possible, choose oils in accordance with the information on sustainable oils in Chapter 9.**
 - Canola, soybean and sunflower oils can be sustainable; palm oil should be avoided.
- **Be conscious of natural and artificial colours and flavours.**

See the appendix for more information on additives.

287	Berardy et al., 2013.
288	US Department of Energy, 2008.
289	Wendel, 2000.
290	World Bank Group, 2015.
291	Smithers, 2008.
292	Smithers, 2008.
293	Meneses & Flores, 2016.
294	Durham & Sleight, 2004.
295	Burrington, 2017.
296	Graveland-Bikker & Kruijff, 2006.
297	Zabaniotou & Kassidi, 2003.
298	Humbert et al., 2009.

Tips for choosing packaging

Choose bulk.

This reduces the use of paper and/or plastic packaging.

If possible, choose paper packaging.

In a preliminary study of egg carton packaging, polystyrene (plastic) packaging was found to have a higher environmental impact than recycled paper and produced up to 16 times more greenhouse gases; however, paper packaging was found to produce more heavy metals²⁹⁷.

In a study of baby food packaging, when assessed over the same distance of transportation, plastic packaging was found to have a smaller environmental impact than glass packaging, although the difference is minimal.²⁹⁸

Appendix

Homemade supplements

Making your own supplements is easy and cost-effective. Below is information about some key ingredients.

VITAMINS AND MINERALS

Nutritional yeast

Nutritional yeast is a species of yeast grown for its nutty, cheesy taste. When fortified, it is a great source of protein, B vitamins, and trace minerals. It is often found in vegan recipes as a healthy, sustainable substitute for cheese and salt.²⁹⁹

Miso

This is a fermented soybean paste with vitamin and minerals such as manganese, copper, and B vitamins. It is also a good source of probiotics. However, it is also high in sodium.³⁰⁰

PROTEIN

Cricket flour

Cricket flour is very high in protein, vitamins, and minerals, particularly iron and B-12.³⁰¹ It is gluten free so cannot completely substitute for flour in recipes, but is a good supplement.

Legume flour

Chickpeas, mung beans, and lentils are all legumes and their flours contain high amounts of protein.³⁰² They are all gluten free so cannot completely substitute for flour—but chickpea flour is said to make the best-tasting cookies!³⁰³

Soy protein isolate

This is a plant-based protein powder derived from soybean.

Whey powder, skim milk powder

These are animal-based protein powders derived from dairy, typically made from by-products of milk production.

299 Julson, 2017.
300 Berkeley Wellness, 2016.
301 Hartwick, 2017.
302 Du et al., 2014.
303 Thongram et al., 2016.

FATS

Nut butter

Peanut, almond, cashew—these are all nuts with high amounts of protein and unsaturated fats. Be aware that they are all quite calorie-dense.³⁰⁴

Oils

Certain vegetable oils such as olive and avocado can add unsaturated fats to the diet.³⁰⁵ Coconut oil is a high source of saturated fat.

Margarine, butter

Margarine and butter are spreads which can be good sources of fat, but may also contain saturated and trans fats.³⁰⁶

Additives

See Health Canada's complete list of approved additives.

ARTIFICIAL FLAVOURINGS

The chemical composition of artificial flavours and natural flavours are the same. The only difference is the source of the chemicals: synthesized from numerous chemicals in the former or derived from numerous chemicals found in plants and/or foods in the latter.³⁰⁷ Natural does not necessarily mean "good" or "safe" and neither does artificial. Ultimately, dosage dictates toxicity: flavourings are safe for consumption in appropriate amounts.

ARTIFICIAL COLOURING, ARTIFICIAL FOOD COLOURANTS (AFCS)

Most of the controversy surrounding artificial food colourants (AFCs) involve links between its consumption and children's behaviour, and attention deficit disorder in particular. It is statistically challenging to come to a hard conclusion of the effect of one variable on the other because of the variance in data collection and methodologies over the past 35 years.³⁰⁸ Ultimately, the United States Food and Drug Administration along with the European Food Safety Authority have concluded that there is no substantial link between the tested colourants and behavioural effects.³⁰⁹ Again, dosage dictates toxicity: artificial colourants are safe for consumption in appropriate amounts.

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Ilton, 2018.
Beck, 2016.
Blonz, 2013.
Bloom, 2017.
Nigg et al., 2012.
International Food Information Council (IFIC) & U.S. Food and Drug Administration (FDA), 2010.

ARTIFICIAL SWEETENERS

Artificial sweeteners are a sugar substitute which can either come in low-calorie or zero-calorie forms. They are commonly used by diabetic patients and those looking to lose weight.³¹⁰ However, few studies support their efficacy: most provide evidence of their contribution to high blood sugar and obesity as a result of altering the gut microbiota.^{311 312}

Genetically modified organisms (GMOs), genetic engineering (GE), genetically modified (GM)

Crops have been genetically modified for thousands of years. Through plant breeding and artificial selection, we have been able to domesticate plants into the fruits and vegetables we consume today.³¹³ Genetic engineering is a new technology for genetically modifying crops. Before a genetically engineered crop is approved for growth and sale in Canada it must undergo a rigorous assessment by Health Canada to ensure it is safe for human consumption.³¹⁴ Genetic engineering is used in several different forms of pesticides (a term that includes herbicides, insecticides and fungicides)³¹⁵. GM crops are commonly genetically engineered to resist herbicides that may be used to control weeds. However, the use of these crops prompts the proliferation of herbicide-resistant weeds, increasing farmers' reliance on chemical herbicides and allowing herbicide-resistant weeds to proliferate.³¹⁶ The chief concerns with GM crops arise from the uncertainty related to the long-term health effects of both consumption and the associated increased use of herbicides and pesticides. Dietitians of Canada and Health Canada state that there are no such effects^{317 318}. However, Health Care Without Harm encourages healthcare facilities to refrain from purchasing genetically engineered foods due to evidence of risks worldwide.³¹⁹ In Canada, four GM crops are currently grown: corn, soybean, canola, and sugar beet.³²⁰

310 Dietitians of Canada, 2018.

311 Suez et al., 2014.

312 Feehley & Nagler, 2014.

313 Gepts, 2001.

314 Health Canada, 2012.

315 Canadian Biotechnology Action Network (cban.ca)

316 Gilbert, 2013.

317 Dietitians of Canada, n.d.

318 Health Canada, 2018.

319 Healthcare Without Harm, n.d.

320 Dietitians of Canada, n.d.

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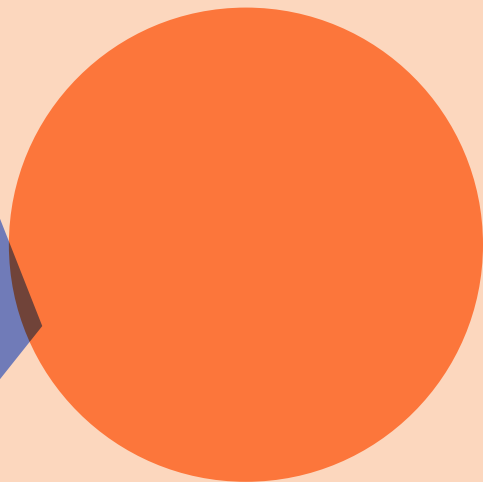
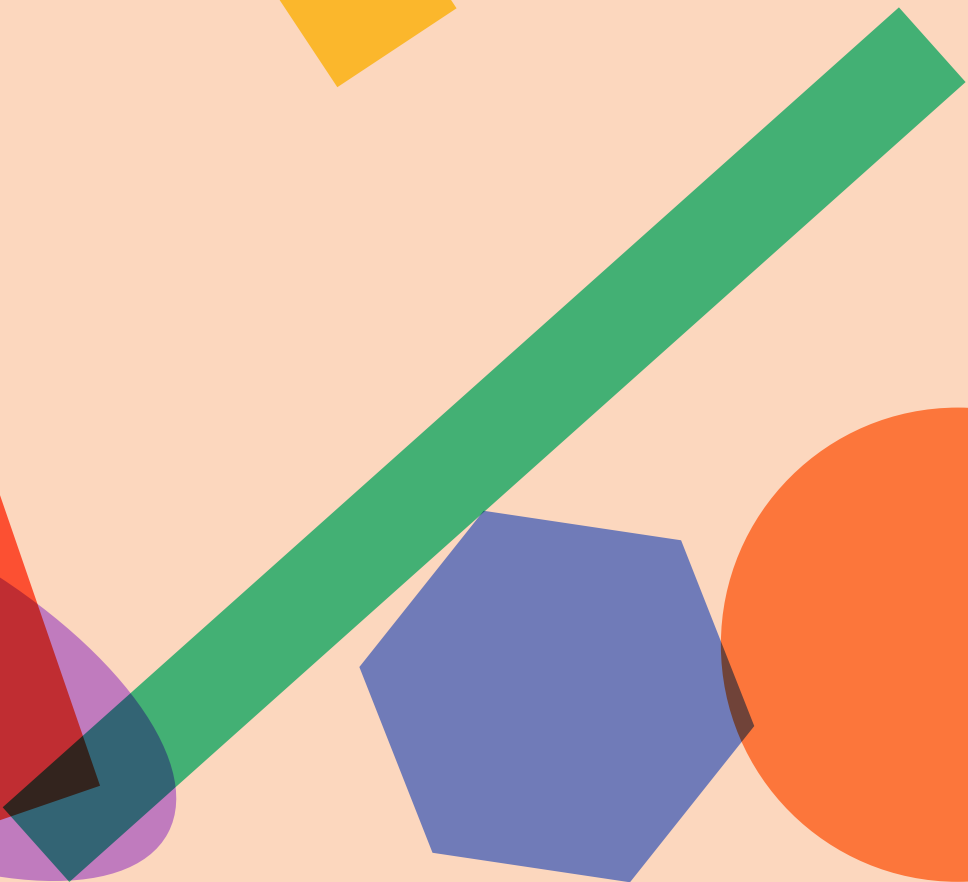
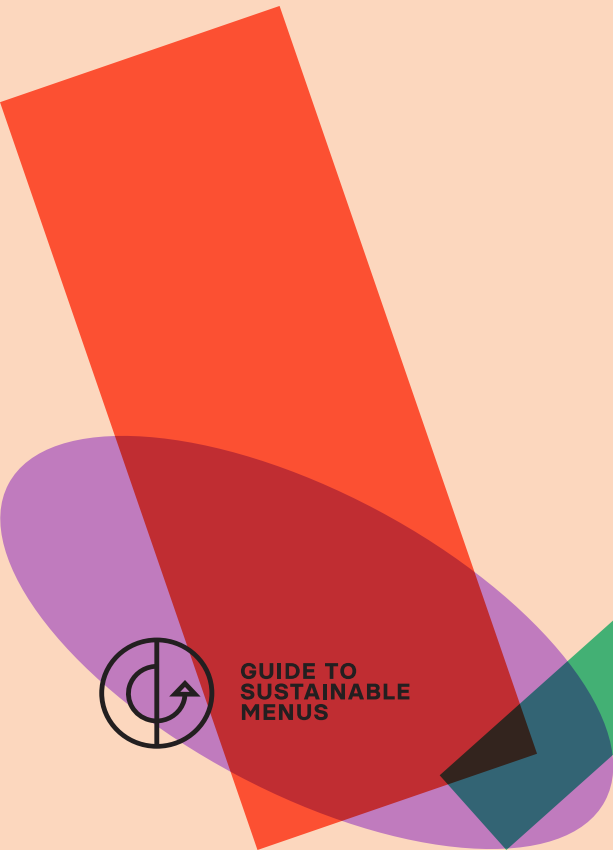
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