Reformulation for Health

Guide to Reformulation







Introduction

Reformulation support for Scotland

We all know that the impacts of a poor diet and obesity are profound. The Scottish Government's obesity prevention plan: A Healthier Future highlights the visions and ambitions of improving diet and health across our nation.

Recipe reformulation is rated as one of the most effective ways industry can help improve dietary health. Our Reformulation team is helping small to medium sized food companies to reformulate their products. This support is available for both FDF members and non-members. This project is funded by the Scottish Government and we work with a range of partners to help businesses access a wide range of support and funding.



Joanne Burns is the **Reformulation for Health** Manager. Joanne and the reformulation team aim to help and support small and medium sized food companies to make their products healthier. Funded by the Scottish Government this service is free of charge and open to all. The reformulation team will work closely with each business to find a tailored solution, where additional support or funding is required Joanne can signpost you as required.

What is reformulation?

Reformulation involves making changes to an existing recipe to boost the health profile of the product. We work to enable the 8 principles of reformulation which will have the biggest impact on the dietary health of the consumer.

- 1. Reduce Fat
- 2. Reduce Calories/ Portion Size
- 3. Reduce Salt
- 4. Reduce Sugar
- 5. Increase Fibre
- 6. Increase Fruit and vegetables
- 7. Replace Ingredients with healthier alternatives
- 8. Improve consumer information

This guide sets out the 8 principles of reformulation, providing a basis for you to start out on your reformulation journey.

Working with us

The Reformulation for Health team will work to find a tailored solution for each business. This may include reducing fat, salt and sugars from products; or increasing levels of fibre and fruits and vegetables within foods; or even looking at portion size and clearer labelling information. No two reformulation projects are the same, and while some may be as simple as replacing salt for a low sodium alternative, others may utilise multiple principles to get the most out of their reformulation.

While we are here to support Scottish SME size manufacturers, we understand that there are other key influencers to reformulation. We can work with suppliers or manufacturers who feed into Scotland, as making a change to one pre-made ingredient can help hundreds of manufacturers who use these ingredients in Scotland.





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Reformulation For Health Principle 1: Reduce Fat

What is fat?

Fats are a key dietary component obtained from a variety of both animal and plant based sources such as butter, cheese, nuts and oils. They provide energy storage within the body, with the greatest amount of energy per gram (9kcal) in comparison to protein and carbohydrate (4kcal). In addition, fats play a vital role in the structure and function of our cell membranes and act as a carrier of vitamins A, D, E and K. In food, fat has a variety of functions, some of which include providing moisture retention, creamy mouthfeel aeration and plasticity. Structurally most dietary fat molecules are composed of three fatty acids bonded to glycerol. This structure is known as triacylglycerol or triglyceride. The arrangement, composition and length of fatty acids within the triglyceride can alter the health properties, functionality and determine the category of fat.

Types of fat

Fatty acids can be described as saturated or unsaturated. A major functional difference being saturated fats are typically solid at room temperature, whereas unsaturated fats are liquid. Unsaturated fats are considered to be healthier than saturated fat with some being essential for normal bodily functions such as Alpha linolenic acid (ALA) and Linolenic acid (LA).These are known as essential fatty acids and cannot be produced by the body. Another type of fat is Transfat. However, due to its known adverse affect on health, this has largely been removed from UK food production. Examples of types of fat and there sources can be seen below:

Saturated: cheese, butter, meat, coconut oil

Unsaturated: Nuts, seeds and Oils Polyunsaturated: Omega 3 such as eicosapentaenoic acid (EPA), found in oily fish and walnuts. Monounsaturated: avocados, nuts and olive oil.

> food & drink federation

Why should fat be reduced?

Due to the high energy availability of fat (9kcal per gram), overconsumption can result in obesity with some types of fat including saturated fat contributing to an increased risk of heart disease and raised blood cholesterol. Replacing a proportion of saturated fats in a product with lower calorie alternatives such as fibre (4kcal) can significantly reduce the number of calories, improving the nutritional value. It is therefore key to consider the type and quantity of fat consumed in a food product and if it can be reduced or swapped. Typically, food contains a mixture of saturated and unsaturated fatty acids but in general the proportion of saturated fats in a product should be reduced or swapped for healthy unsaturated fats where possible.

What is the recommended intake?

In the UK SACN recommends that total dietary fat intake for adults should not exceed 35% of our total daily calories with no more than 11% being from saturated fat. On average the total fat target is being reached. However the <u>National Diet and</u> <u>Nutrition Survey</u> shows that saturated fat is still too high at 12.3%.

Target average intake of Saturated Fat (of total dietary energy

Average intake of Saturated

Fat currently (of total

dietary energy)

Ways to reduce fat

Unsaturated fat alternatives: Using unsaturated alternatives such as sunflower or olive oil spread instead of butter or switching coconut oil to rapeseed oil can help to reduce saturated fat levels.

Partial substitution of high fat ingredients:

Switching out a percentage a of high fat meat ingredient with vegetables and pulses not only reduces fat content but helps cut costs. For example, adding lentils to a beef curry.

• Changing the cooking process: Altering the manufacturing process where possible can reduce the quantity of fat introduced into a product. For example, baking uses less oil than frying.

Reduced fat versions:

Can a recipe be altered to include a reduced fat version? For example reduced fat cheese or skimmed milk instead of whole milk.

• Identifying individual components: Can a specific component of a product

be reduced? For example, reducing the quantity of butter cream on a cup cake or the quantity of cheese as a pasta topping.

• Can the overall portion size be reduced? Slightly reducing portion size can significantly reduce fat content.

• Use of fat replacers

Non-fat based compounds such as protein and fibre can be used to replace fat.

Use of Interesterfied fats

Emulsifiers

Emulsifiers can be used help to stabilise a product and retain the textural and structural properties of a product when fat is reduced. Lecithin, found in egg yolk, sunflower and soy beans is an example of an emulsifier commonly used.

Fat Replacers

In order to replace fat in a product we must use ingredients that mimic the functional properties of fat to retain the correct texture, taste and mouthfeel without affecting the overall quality of the product. Although often complicated, this process does not have to be challenging as there are several manufacturers that offer tailored replacement blends and advice specific to your product. For example, there is a clean label Tapioca Starch based product which can replace up to 50% fat in a variety of applications including bakery products such as cakes, pastries and buttercreams as well as ice cream and frozen desserts.

For more information on manufacturers that offer this service please contact the FDF Scotland reformulation team.

Functional Fibre

Functional fibres are extracted and isolated from whole foods then added to processed food. They are extremely versatile with a variety of compositions from different sources of both short chain and long chain fibres. The wide variation available means that they have an excellent range of functions including mimicking the gel forming properties and creamy mouthfeel of fat. An example of this is Inulin, a clean label fibre commonly sourced from chicory root. This not only replaces fat but also improves the nutritional credentials. For more information on the benefits of fibre please see principle 5.

Interesterified Fat

Interesterification is a process in which the fatty acids in a triglyceride molecule can be chemically rearranged to produce a fat with desired functionality. Often saturated fats are used specifically for there properties such as high melting point. Therefore replacing saturated fat with interesterified fat allows for reduction of saturated fat content without losing the functionality. For example, interesterification can produce a fat with a high melting point but low in saturated fatty acids. This application is currently used across a variety of products in the UK including dairy cream alternatives and biscuits.



Nutritional Claims

Claims are a great way for manufacturers to let consumers know that their products are low in fat. Some of the permitted under under <u>Regulation (EC) 1924/2006</u> can be seen below:

Fat-free

The product contains no more than 0.5g of fat per 100g or 100ml

Low fat

The product contains no more than 3g of fat per 100g for solids or 1.5g of fat per 100ml for liquids (1.8g of fat per 100ml for semiskimmed milk)

Low saturated fat

The product does not contain more than 1.5g per 100g of saturated fatty acids and trans fatty acids for solids, or 0.75g per 100ml for liquids. In either case, the sum of saturated fatty acids and trans fatty acids must not provide more than 10% energy.

Saturated fat-free

The sum of saturated fat and trans-fatty acids in the product does not exceed 0.1g of saturated fat per 100g or 100ml

Source of omega-3 fatty acids

The product contains at least 0.3g ALA per 100g and per 100kcal, or at least 40mg of EPA + DHA per 100g and per 100kcal

High in omega-3 fatty acids

The product contains at least 0.6g of ALA per 100g and per 100kcal, or at least 80mg of EPA+DHA per 100g and per 100kcal



Front of Pack Labelling (FoP)

The Front of Pack labelling system can be used to show consumers the percentage of fat, saturated fat, sugars and salt in your product in a easy to understand format. This makes it easy for consumers to choose products that contribute to a well balanced diet.



4%

1%

5%

Each 1/6 pack contains

of the reference intake*

9%

Typical values per 100g: Energy 2068kJ / 495kcal

Nutrient Profile Model

In the UK, a nutrient profiling model is used to define products high in fat, salt or sugar (HFSS), to determine what can or cannot be advertised to children on TV, internet, outdoor spaces and in print media.

Useful Information

- SACN Report on Saturated Fats and Health 2019
- British Nutrition Foundation Fat
- FoP Guidance Document
- Nutrient Profile Model



6%



Reformulation For Health Principle 2: Reduce Calories /Portion Size

What are calories?

Calorie, also known as Kilo-calorie (Kcal) is a unit of energy. Food provides us with this energy fuelling all our bodily functions which are vital for keeping us alive.

What is the recommended intake?

In the UK SACN provides dietary reference values for daily calorie consumption specific for the age and sex of a person. This is based on estimated average requirements across the UK population. However, in general woman should consume no more than 2000kcal and men no more than 2500kcal/day.

On average we consume much more calories than is needed. Consuming more energy than is used results in the storage of fat. Excess calorie consumption can therefore lead to obesity with the risk of developing type 2 diabetes and cardiovascular disease. <u>The Scottish Dietary</u> <u>goals 2016</u> suggests that on average we should be eating 120kcal less per day.

The Calorie Reduction Programme

Public Health England's (PHE) <u>Calorie</u> <u>Reduction Programme</u> aims to achieve a 20% reduction in calories in the UK by 2024. Food categories involved include: sandwiches, crisps, savoury snacks, pizza and pastry products. With the focus on the following:

- Reducing the calorie level in products
- Reducing the number of calories in a portion that is likely to be consumed in a single sitting
- Shifting consumer purchasing towards lower calorie products

Note: the Calorie Reduction Programme does not include high sugar products. For guidance on this please refer to the <u>Sugar</u> <u>Reduction Programme.</u>



How to Reduce Calories

Portion Size: In the UK there is a wide variation in portion size across food products of the same category. For example a packet/ portion of crisps may differ from one manufacturer to another. Slightly reducing portion size can significantly reduce calories without impacting the taste that consumers know and love.

Benchmarking: The UK wide guidance set by the PHE Calorie reduction programme can be used as benchmark for portion size in a given category.

PHE Guideline examples:

Garlic Bread - 235kcal/portion Crisps and Savoury Snacks - 115kcal/portion Chips and Potato products - 205kcal/portion

Take care not to reduce the portion size to the point that the consumer will eat two portions or replace the missing calories with other foods.

Packaging advice: Clear information on packaging can help consumers eat the correct portion size. For example how many servings does a product contain, is it a meal for one, two, or four? Is the product intended to share or as an individual snack?

Product format: introducing a new smaller version of a well loved product with the number of calories indicated may shift purchasing towards the lower calorie option. For example, a 100 kcal treat sized bar.

Reformulation: both sugar and fat contribute significantly to calorie content with 4kcal/g and 9kcal/g respectively. Reformulation with the aim of sugar and fat reduction is therefore a great way to reduce calories. For more information see reformulation principles 1 and 4.



Reformulation For Health Principle 3: Reduce Salt

What is Salt?

Salt, also known as sodium chloride is a major source of dietary sodium in the UK. Sodium is an essential nutrient for many body functions including the transportation of water and nerve and muscle activity. However, on average we consume much more than is required. To calculate how much salt is in a product, the sodium value is multiplied by 2.5.

What is the daily recommend intake?

SACN recommends that no more than 6g of salt should be consumed per day. According to the <u>Scottish Health Survey (2018)</u>, the current intake is approximately 9g.

High salt intake can have a negative impact on health including raised blood pressure, water retention, and increased risk of heart attack, kidney disease and stroke. It is therefore in the interest of public health to reduce the current intake through reformulation of products.

Salt Reduction Targets 2024

The <u>Salt reduction targets for 2024</u> is part of the Public Health England Reduction and Reformulation programme for the UK. It outlines the target level of salt and sodium in food and drink products across 84 specific food groups that contribute the most to salt and sodium intake. Foods commonly high in salt include cheese, bread, meat products, and ready meals.

Nutritional Claims

Claims are a great way for manufacturers to let consumers know that their products are low in salt. Nutritional claims associated with salt include: Low sodium/salt, very low sodium/salt, sodium/salt free and no added sodium/salt. For guidance please refer to <u>Regulation (EC) 1924/ 2006</u>

Functions of Salt

Preservation: Salt can be used to extend the shelf life of a product by decreasing the water activity. This prevents the growth of spoilage micro-organisms. This is common in meat and fish products.

Texture and Flavour: Salt can be used as a flavour and texture enhancer. This is common in cheese products.

Technical Ingredient: Salt can be used in processing mechanisms such as regulating yeast fermentation. This is a vital in the bread making process to achieve the correct dough consistency.

Ways to Reduce Salt:

Gradual decrease: encouraging consumers to change their palates slowly over time.

Sodium alternatives: low sodium salts containing chemical substitutes such as potassium chloride can be used. Those available include 35% sodium reduced and 66% sodium reduced salt.

Seaweed and yeast can also be used as a sodium alternative. Seaweed significantly lower in sodium than salt (up to 85%) with the added health benefits of a mixed mineral composition. Yeast can be used to enhance flavour whilst reducing salt across a range of products including savoury snacks and cheese.

Distribution: The size and distribution of the salt crystals can have an impact on perceived saltiness. Undissolved small crystals have a saltier taste than larger crystals. For example, using a smaller crystal size on the top of focaccia can reduce the quantity of salt used compared to larger salt crystals. Reductions in salt can also be made to individual components of a product where less salt is needed for example in a pie shell compared to the filling.

Flavour change: herbs and spices can be used to reduce the level of salt required.



Reformulation For Health Principle 4: Reduce Sugar

What are sugars?

Sugars are carbohydrates that play an important role in many of the foods that we eat. They may be found naturally contained within the structure of foods i.e fruit, vegetables and milk, or they can be described as "free sugars"- those which are added in the manufacturing process of confectionery, baked goods and dairy as well as those found naturally in fruits juices, honey and syrups.

What are the functions of sugar?

There is a wide range of functional properties that sugar can achieve in a product, some of which can be seen below:

- Sweetness
- Colour and Flavour

- Bulk
- Solubility PropertiesMouthfeel
- Stability
- Shelf life
- Preservation

Viscosity

Humectancy

What are the dietary recommendations for sugar?

In the UK SACN recommends that no more than 5% or 30g of free sugar should be consumed each day. With the total amount of sugar being 90g/day. On average adults in the UK currently exceed this with 11.7% of sugar in their total dietary intake per day.

Sugar is a high energy ingredient with 4kcal/g. Excess consumption of free sugar can therefore lead to obesity with an increased risk of type 2 Diabetes and Cardiovascular Disease. High sugar intake also contributes towards the risk of dental caries. More Information on the impact of sugar on health can be found in the <u>SACN Carbohydrate and</u> <u>Health Report 2015.</u>

How can sugar be reduced?

- Reducing portion size
- Slightly reducing the amount used
- Changing the ratio of components
- Decrease sugar in a specific component
- Product structure: can product structure be manipulated to enhance how sugar dissolves on the taste buds?
- Increasing other flavours to give a sweet
 perception e.g. vanilla
- Adding fibre

Example: Reducing sugar in a bakery item

1. Decrease the size of the portion/can it be made slightly smaller?

2. Alter product ratio e.g. reduce amount of filling or topping used.

3. Reducing the sugar in a single component. For example reducing the sugar content in a cake mix but leaving the topping unchanged.

4. Can a sugar alternative be used?



Average intake of free sugars currently (of total

5%

dietary energy)

Target average intake of free sugars (of total dietary energy



food & drink Website: www.fdfscotland.org.uk Email: reformulation@fdfscotland.org.uk

Sugar Replacers

In order to reduce sugar we need to use ingredients that mimic the functions that sugar provides whilst giving the correct texture and mouthfeel of the products we know and love. This delicate balance can be achieved using two main ingredients bulking agents and sweeteners.

Bulking agents

Bulking agents replace the bulk that is lost when sugar is removed. Some may also add sweetness to the product but not to the same extent as sugar. For this reason bulking agents are used in combination with a sweetener. Examples of bulking agents include Polydextrose, Inulin, Fructo-oligosaccharide and Tapioca Starch.

Sweeteners



Labelling requirements

If a product contains more than 10% polyols it must be labelled with "excessive consumption may produce laxative effects"

2. Intense sweetener

Intense sweeteners are used in small quantities but are very sweet in comparison to sucrose. For example aspartame is approximately 200 times sweeter than sucrose.

Sweetener application

Both Intense and Bulk sweeteners have regulatory restrictions and maximum usage values under <u>Regulation (EC) No 1333/2008</u>.

Each component of a product may fall under a separate list of permitted additives so it is important to follow regulatory guidance. For example, sucralose is not permitted in cakes, biscuits, pastries and pastry cases of fruit pies. Sweeteners can also vary in functionality between products and so need to be chosen to suit the product specifications.

Examples of applications

Maltitol - gives a open crisp texture in biscuits Xylitol - humectant properties, desirable for obtaining moist sponges and muffins Steviol glycosides - resists high heat treatments in flavoured milk

Healthy swap Sugar to Fibre

Did you know substitutung sugar with fibre not only reduces the sugar content but also can also add nutritional value?

There are now commercially available high fibre blends for replacement of sugar. Making it easier than ever to create a healthier product! For example there is an all in one blend of fibres and sweeteners available which can be used to replace sugar in chocolate production on a 1:1 basis.

For guidance and information on businesses that offer this service please contact the FDF Scotland reformulation team.





Nutritional Claims



Claims are a great way for manufacturers to let consumers know that their products are low in sugar. Those associated with sugar reformulation can be seen below:

No added sugar

Product does not contain any added mono or disaccharides or any other food used for its sweetening properties. If sugars are naturally present in the food, the following indication should also appear on the label: 'CONTAINS NATURALLY OCCURRING SUGARS'.

Sugar free

Product contains no more than 0.5g of sugars per 100g or 100ml.

Low sugar

Product contains no more than 5g of sugars per 100g for solids or 2.5g of sugars per 100ml for liquids.

Energy reduced

The energy value is reduced by at least 30%, with an indication of the characteristic(s) which make(s) the food reduced in its total energy value.

Nutrient Profile Model

In the UK, a nutrient profiling model is used to define products high in fat, salt or sugar (HFSS), to determine what can or cannot be advertised to children on TV, internet, outdoor spaces and in print media.

The Sugar Reduction Programme

The sugar reduction programme was created by the UK government as a set of voluntary guidelines for the reduction of sugar with the aim of a 20% sugar by 2020. With the advice that reduction in sugar could be achieved in the following ways:

- 1. Reformulating products to reduce sugar levels
- 2. Reducing portion size and therefore the amount of sugar
- 3. Shifting consumer purchasing towards lower or no added sugar products

The target was set based on the 2015 average sugar levels for the following categories:

- Breakfast cereals
- Biscuits
- Morning goods
- Ice creams, lollies, sorbets
- Sweet spreads
- Yoghurts
- Cakes
- Puddings
- Confectionery

In recent years FDF members have made great progress towards sugar reduction.



Kantar Worldpanel data for FDF members (2015 - 2019)

For information and bespoke advice on sugar reformulation please contact the FDF Scotland reformulation team.

Useful Information:

- Spotlight on Sugars
- Sugar Reduction Guidlines
- <u>Nutrient Profile Model</u>



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Reformulation For Health Principle 5: Increase Fibre

What is fibre?

Fibre is a type of carbohydrate, made up of long chains of sugar (polysaccharides). Plant based foods including vegetables, fruits, nuts, pulses and grains have fibre rich cell walls, making them an excellent source of dietary fibre.

When we consume fibre, it acts as a bulking agent to the body helping waste move through the small intestine to the colon. This is because the human body does not contain the correct enzymes to break down the β -glycosidic linkages (bonds) that are found in fibre, making them difficult to digest and absorb in the small intestine. When it reaches the colon, fibre can be fermented by good bacteria. This process breaks down the fibre, creating short chain fatty acids which are very beneficial to the body. Any remaining fibre compounds are then excreted.

Types of Fibre

Soluble: dissolves in water to form a gel. Includes pectin and β -glucans. They are naturally found in fruit and oats.

Insoluble: usually not fermented by bacteria but help to provide bulk and increase stool volume. Examples include wheat, bran and wholemeal bread.

Resistant Starch: soluble fibre which is highly fermentable by gut bacteria. Naturally found in grains, potatoes and bananas.

Prebiotics: fibre that is digested by gut bacteria to produce short chain fatty acids. Short chain fatty acids provide energy for intestinal cells as well as acting as signalling molecules that can reach the brain and have a positive impact on mental health.

Functional Fibres: those which are extracted and isolated from foods or by products of manufacturing. An example of this is corn fibre extracted by the hydrolysis of corn starch.

What are the health benefits of fibre?

- Increased faecal bulk and softening reduces chances of constipation
- Control of blood sugar levels
- Weight management
- Positive affect on the diversity of good bacteria in the gut
- Reduces risk of cardiovascular disease by reducing blood pressure and inflammation
- Reduces the risk of type 2 Diabetes

How much fibre is recommended?

In the UK SACN recommends that adults should eat 30g of fibre per day. However, there is no specific targets for food manufacturers to increase the levels of fibre within their products.

ONLY 9%

Fibre Gap

Currently there is a wide gap between average fibre intake and the daily recommended intake of **30g.**

On average in UK we consume only **19.7g** of fibre leaving a large gap of **10.3g** of fibre missing from our diets on a daily basis. This is a significant challenge for public health but with positive reformulation, public health messaging and education, improvements can be made.



Action on Fibre Pledge

Help bridge the gap between fibre intake and the dietary recommendation by making higher fibre diets more appealing, normal and easy for the population. Find out more information here.

Ways in which you can make a pledge:

- Launching new higher fibre products
- Reformulation of current consumer favourites
- Supporting annual awareness campaigns
- Labelling



Reformulation

In the UK it is common to rely on a diet high in processed foods which are easy to eat and quick to prepare. Reformulation of these products can allow for easy access to increased fibre. The aim is not to encourage consumers to eat more as this can result in increased calorie intake but to encourage consumers to purchase products that are high in fibre. Reformulation of products that consumers already buy can therefore help to bridge the gap to make it easier for the daily target of 30g to be achieved.



of consumers say that they are actively looking for high fibre products²

Reformulation and Nutritional Claims



Nutritional Claims are a great way for manufacturers to let consumers know that their product is rich in fibre. Reformulation with added fibre can improve the nutritional value of a product and may allow for this nutritional claims to be made. Regulation (EC) 1924/2006.

"Source of Fibre"

The product contains at least 3 g of fibre per 100 g or at least 1.5 g of fibre per 100 kcal.

"High in Fibre"

The product contains at least 6 g of fibre per 100 g or at least 3 g of fibre per 100 kcal.





Reformulation and Functional Fibre

Fruits, vegetables, pulses and cereals can be added to increase the fibre content of a product. It could be as easy as switching out one ingredient for another. For example, a low fibre flour to a high fibre flour. However, consumers often value taste and other sensory characteristics over the health quality of the product and so it is important to choose the right sources of fibre for reformulation.

Functional fibres are extracted and isolated from whole foods then added to processed food.

They are extremely versatile with a variety of compositions from different sources of both short chain and long chain fibres. The wide variation available means that they have an excellent range of functions.

The application of functional fibres has the potential to not only increase fibre content but can reduce levels of fat, sugar and calories within your product recipes, helping to achieve UK nutritional targets on sugar and calorie reduction.

Functional fibres can:

- Improve texture
- · Bulking agent
- Improve viscosity
- Creamy mouthfeel
- Gel forming
- Anti-sticking
- Humectant
- Clean label

In industry fibres are usually added in a blend specific to the function needed. Short chain fibres can also be used to increase the fibre levels for the sole purpose of nutritional claims without any extra functional benefits if desired.

Inulin and Fructo-oligosaccharide (FOS)

Inulin (long chain) and Fructooligosaccharide (short chain) are great examples of functional fibres. They are commonly sourced from chicory root and can be described as chicory extract allowing for a clean label. Inulin is neutral in taste whereas FOS is slightly sweet. They can be used to replace both sugar and fat due to bulking and gel forming properties as well as providing a creamy texture. Inulin and FOS are also prebiotic, low fat and low calorie.

Other Functional Functional Fibres:

- Polydextrose
- Corn
- Oat,
- Wheat,
- Potato,
- Seaweed*
 Fruit pomace*
- Nopal (cactus)*

*New emerging, sustainable sources of functional fibre

Applications in Industry

Ice cream, dairy and confectionery:

thickening, improved viscosity, bulking, creamy mouthfeel, can be used to replace sugar and reduce calories.

Snacks: strengthens products such as crisps and wafers preventing breakage.

Bakery: can be used to replace sugar and fat through bulking, thickening, gelling and creamy mouthfeel.

Meat and meat alternatives: improved water retention, shape and enhanced mouthfeel. Can be used to create a high fibre rusk.

Fillings: reduced stickiness, improved texture, increased lubrication, better flavour profile.

For information on suppliers of tailored fibre blends and bespoke advice on reformulation please contact the FDF Scotland reformulation team. 1 - NDNS: results from years 9 to 11 (2016 to 2017 and 2018 to 2019)

2- Kantar - Changing consumer choices 2021







Reformulation For Health Principle 6: Increase Fruit & Vegetables

What are fruit and vegetables?

Fruit is the seed containing structure of a flowering plant whereas a vegetable is any edible part of the plant that is not the fruit or seed such as stems, leaves and roots. Fruit and vegetables can be consumed in a number of ways including cooked, raw, dried, canned and frozen. They are rich in vitamins, minerals and dietary fibre, helping to reduce the risk of heart disease, stroke, and some types of cancer.

What is the recommended intake?

The UK government recommends that we eat at least five portions of fruit and vegetables per day. According to the <u>Scottish Health</u> <u>Survey 2018</u> only 22% of adults meet the five a day target. A portion of fruit or vegetable is classified as 80g or the equivalent in dried (30g) or juiced (150ml). Due to the high free sugar content, only one portion of dried fruit and one portion of fruit juice counts towards your five a day. Potato, plantain and cassava are example of plant foods that do not contribute towards the five a day target due to their starchy composition. Further information on fruit and vegetable portions can be found <u>here.</u>

Healthy Choices

Labelling can be a great way to help consumers make better choices when purchasing food products. When signposting composite foods with "five a day" messaging it is important to remember the following:

- In a serving of the product there must be at least one portion of appropriate size (80g) of fruit or vegetables.
- If there is greater than one portion of fruit or veg, the portions must differ from one another.
- The product should not be high in fat, salt or sugar.

How to Increase Fruit and Vegetables:

1.Slightly increase the proportion of fruit or vegetables already in a product to reach a given portion (80g)

2.Adding vegetables and pulses to provide bulk to a product. This not only adds nutritional value but helps to reduce costs of meat products. This includes:

- Adding onion and lentils to cottage pie.
- Partial substitution of mince beef with mixed beans in chilli con carne.
- Adding onions, leeks and garlic to sausage, also enhances flavour

3.Adding vegetables to a sweet bakery items. Examples include:

- Carrots, butternut squash and sweet potato and pumpkin can all be added to cakes, muffins and tarts to add moisture and sweetness.
- Beetroot provides improved texture and richness to chocolate cake without the beetroot flavour. Its vibrant pigment can also be used as a natural colouring for icing.

4.Partial replacement of sugar with fruit products. Examples include:

- Adding dates for sweetness
- Using fruit juice instead of syrup.





Reformulation For Health Principle 7: Replace ingredients with healthier alternatives

Salt Replacers

- Seaweed
- Yeast
- Low sodium salts such as Potassium Chloride
- Herbs and Spices
 Please see
 - principle 3 for more information.



Sugar Replacers

In order to replace sugar we need to use ingredients that mimic the functions that sugar provides whilst giving the correct texture and mouthfeel of the products we know and love. This delicate balance can be achieved using two main ingredients bulking agents (to replace the bulk) and sweeteners (to provide sweetness). Please see principle 4 for more information.



Healthy Alternatives

Replacing unhealthy ingredients such as sugar and saturated fat with a healthier alternative can significantly improve the nutritional qualities of a food product, helping to fight obesity and reducing the risk of cardiovascular diseases with the UK.

For bespoke guidance on reformulation and information on alternative ingredient suppliers please contact the FDF Scotland reformation team.

Bulking Agent Examples: Polyols (also sweeteners) Fibre - Inulin, FOS, Oat, Wheat, potato, seaweed, fruit pomace, Polydextrose.



Sweetener Examples:

Bulk sweeteners - Polyols such as Eythritol, Sorbitol, Isomalt, Xylitol **Intense sweeteners** - Aspartame, Sucralose, Saccharin, Stevol glycosides

Fat Alternatives

Saturated fats such as coconut oil, palm oil, butter and cheese can be switched to a healthier unsaturated fat or reduced fat alternative. Please see principle 1 for more information.

Unsaturated Fat Alternatives:

Rapeseed oil

Low Fat Alternatives:

- Olive oil
- Skimmed milk
- Reduced fat cheese

Fat Replacers

Fat replacers can help to significantly reduce the saturated content fat whilst retaining the textural properties and mouthfeel of a product.

Examples of Fat Replacers

- Fibre Chicory Inulin
- Protein Whey proteins
- Carbohydrate Tapioca Starch





Reformulation For Health Principle 8: Improving Consumer Information

Why is consumer Information important?

Providing consumers with as much information as possible about a product allows for well informed healthy dietary choices to be made Information may include front of pack labelling,portion size, cooking method, nutrition claims, and recipe suggestions, all of which enable consumers to gain a better understanding of the product that they are eating.

Front of Pack Nutrition Labelling:

Voluntary labelling system produced to give consumers concise and consistent nutritional information that is straightforward to understand.

Each 1/6 pack contains



of the reference intake* Typical values per 100g: Energy 2068kJ / 495kcal

The colour coded system allows consumers to quickly identify the nutritional value of a product,determining at a glance if it is high, medium or low in fat, saturated fat, sugar and salt. This makes it easy for consumers to choose products that contribute to a well balanced diet. Guidance on FoP can be found <u>here.</u>

Portion Size and Packaging Format:

Clear information on packaging can help consumers eat the correct portion size. For example indicating how many servings a product contains. Is it a meal for one, two, or four? The format of the packaging is also important. An individually wrapped products are indicative of one severing whereas several portions in a resealable packaging suggests that not all of the product should be consumed at once.



Sources of Information

In addition to packaging material there are many other ways in which you can distribute product information to consumers.

Examples include:

- company website
- social media
- supermarket product placement
- advertising/marketing TV, magazines, and websites
- product placement in supermarkets

Note: In the UK, a <u>nutrient profiling model</u> is used to define products high in fat, salt or sugar (HFSS), to determine what can or cannot be advertised to children on TV, internet, outdoor spaces and in print media.

Cooking Method:

The way in which a product is cooked can significantly increase or decrease the health credentials. For example, grilling or baking a product rather than frying removes the need for oil and so reduces overall calorie content. Therefore providing more than one method of cooking and indication of the best method allows consumers to make an informed choice.

Recipes Suggestions:

Indication of a product recipe where appropriate can allow consumers to try healthy products that they may not have tried before due to being unsure of how to best use the product.

Nutritional claims



Claims can provide an excellent signpost for consumers who are actively looking for a particular health credential For example products high in fibre or protein or products low in energy or sodium. Guidance on this can be found <u>here.</u>



Useful Information

Health Claims Legislation - Regulation (EC) No 1924/2006

https://www.legislation.gov.uk/eur/2006/1924/annex

Scientific Advisory Comitee on Nutrition (SACN) - Saturated Fats and Health 2019 https://www.gov.uk/government/publications/saturated-fats-and-health-sacn-report

British Nutrition Foundation https://www.nutrition.org.uk

Guide to creating a front of pack (FoP) nutrition label for pre-packed products sold through retail outlets https://www.food.gov.uk/sites/default/files/media/document/fop-guidance_0.pdf

Nutrient Profiling

https://www.fdf.org.uk/fdf/what-we-do/diet-and-health/reformulation-and-portion-size/nutrient-profiling/

Scottish Dietary Goals

https://www.gov.scot/publications/scottish-dietary-goals-march-2016/

Calorie Reduction Programme Techincal Report

https://www.gov.uk/government/publications/calorie-reduction-guidelines-for-the-food-industry

Scottish Health Survey 2018

https://www.gov.scot/publications/scottish-health-survey-2018-volume-1-main-report/

Salt Reduction Targets for 2024

https://www.gov.uk/government/publications/salt-reduction-targets-for-2024

Sugar Reduction : achieving the 20%

https://www.gov.uk/government/publications/sugar-reduction-achieving-the-20

Scientific Advisory Comitee on Nutrition (SACN) - Carbohydrates and Health Report

https://www.gov.uk/government/publications/sacn-carbohydrates-and-health-report

National Diet and Nutrition Survey

https://www.gov.uk/government/collections/national-diet-and-nutrition-survey



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