IT DOESN'T NEED TO BE SO SWEET!

In our diet, sugars are everywhere. They are found in foods naturally or are added to various foods and beverages. Sources of sugars in our diet include fruits and fruit juices, soft drinks, honey, jams and marmalades, plant-based products (e.g., ketchup), precooked foods, desserts and other sweets.
Sugars are a very important source of direct energy for our brains and muscles and are an integral part of our diet. However, with the growth in the availability of sugar-rich foods and beverages, the consumption of sugars in our diets has increased in recent decades, reaching levels that are no longer considered so healthy for many of us.
It is therefore necessary to have awareness about the amount of sugar consumed daily even before we know the maximum intake levels recommended by the WHO.

*Please refer to **"ENERGY INTAKE"** situation for the above in-depth discussion/link.*

Overview "IT DOESN'T NEED TO BE SO SWEET!"

Calculate sugar intake

Context
Health and care
Everyday life

Cognitive processes
Analysing situations
Processing Informations

Target group (incl. necessary prior skills and competences)

Adults

Content
Multiplication and division
Addition and subtraction
Equivalences
Decimal numbers

Dispositions
Self confidence
Beliefs
Flexibility

Outcomes and results

Development of a method for calculating sugar quantities

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Main information

Content	Natural numbers Decimal numbers Units of measurement, quantities (weight:submultiples) Multiplication, division, addition and subtraction
Target group	Adults and young adults Learners ▪ recognize and understand simple, common quantitative representations and use the information to make decisions ▪ cope with one-step, simple operations such as counting, performing basic arithmetic operations to cope with everyday situations ▪ Curious and sensitive to health issues
Learning intention	Numeracy for personal and private purposes
Duration	3 UE+
Material and resources	Picture cards
Group size	from 5 to 10 learners / small group work: 2 to 3 learners
Problem statement	Whether naturally present, added to sweeten or to better preserve the product, sugars can be found, in large quantities, in even the most unthinkable foods. In fact when we refer to sugars we usually think of sucrose, in reality this large category also includes glucose, fructose, lactose, mannose and starches (among many others). In any case, sugars have been directly related to overweight and obesity, especially in children and adolescents, which is why most national guidelines for healthy eating indicate limiting consumption of sugar-rich foods and beverages. Before proceeding to ***"ENERGY INTAKE"*** *situation* in which we address the issue of daily kcal intake and to the subsequent evaluation of the amounts for each macronutrient, let's learn how to calculate the amount of sugar we consume each day.

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Learning outcomes and results	Students will know how to interpret the information on nutrition tables; they will know the unit of weight measurement, especially the submultiples, and they will also become familiar with decimal numbers. Finally, they will be able to use all these skills to calculate the total daily intake of sugar. In addition, if the activity is linked to **"ENERGY INTAKE"**, they will have the ability to convert that amount (*grams*) to kcal.
Reference to National Qualification Frame	Optional (country's decision)

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Working plan

Time (lessons)	Description of content/activities	Material	Methodical and didactic information[1]
40'+	**1. Discover:** Initial discussion in which students speculate whether there is a maximum sugar level not to be exceeded and if so what it is. Followed by a short presentation (e.g. power point, video) in which the topic is addressed. *It is recommended to use images such as those in the appendix*	presentation (at teacher's discretion) projector (see appendix 1)	**information** **HITS** Questioning
60'	**2. Quantity analysis** Observe some cards representing the nutrition tables of some packaged foods and start thinking about the amounts of sugar contained by paying attention to the information present (amount per 100g or per serving? how much is a serving worth?). *In most cases it will be expressed as decimal numbers or with units less than gram: learners are assisted in this part of the analysis.* Through simple multiplications and division calculate the amount of sugars taken in the case reported by the card by a single person for a meal, thus obtaining new cards with the amounts related to a person's consumption.	*Cards*	***hands on learning*** *Working in small groups* ***HITs*** *Questioning* *Explicite teaching* *Collaborative learning* *Metacognitive strategies*
60'	**3. Calculates the quantity** Using the cards obtained from the previous activity, learners take part in a game in which they combine various foods/ingredients to think of at least 3 meals to eat while trying to stay within the recommended threshold. The groups share the chosen combinations and a discussion time takes place afterwards.	Rearranged cards with nutritional chart	***Working in small groups*** ***HITs*** *Questioning* *Collaborative learning* *Feedback*

[1] for description and explanation of kinds of tasks, HITs and other background information please consult the teachers' guide

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45’	**<u>3.1 (eventually) Calculates the kcal</u>** Using the conversion from grams to kcal in the case of sugars, students transform the quantities found in the previous step into kcal. *This step is related to the **“ENERGY INTAKE”***		**HITs** *Questioning* *Explicite teaching*
60’	**<u>4. Discussion of work done and information gained.</u>** The discussion is guided by also asking learners when mathematical tools were used during their investigation and asking them to do a confidence analysis with which these methods were used.		***HIT:*** *feedback*
60’	**<u>4. Discussion of work done and information gained.</u>** The discussion is guided by also asking learners when mathematical tools were used during their investigation and asking them to do a confidence analysis with which these methods were used.		***HIT:*** *feedback*

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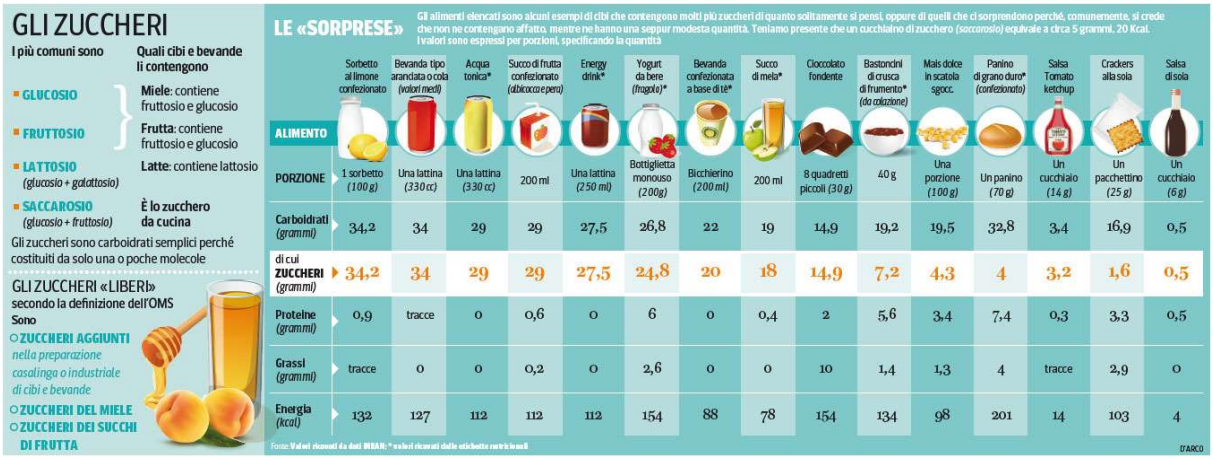
Appendix 1

PHASE 1: DISCOVER

Some examples of impactful images to address the theme



GLI ZUCCHERI

I più comuni sono — Quali cibi e bevande li contengono

- GLUCOSIO — Miele: contiene fruttosio e glucosio
- FRUTTOSIO — Frutta: contiene fruttosio e glucosio
- LATTOSIO (glucosio + galattosio) — Latte: contiene lattosio
- SACCAROSIO (glucosio + fruttosio) — È lo zucchero da cucina

Gli zuccheri sono carboidrati semplici perché costituiti da solo una o poche molecole

GLI ZUCCHERI «LIBERI» secondo la definizione dell'OMS

Sono

- ZUCCHERI AGGIUNTI nella preparazione casalinga o industriale di cibi e bevande
- ZUCCHERI DEL MIELE
- ZUCCHERI DEI SUCCHI DI FRUTTA

LE «SORPRESE» Gli alimenti elencati sono alcuni esempi di cibi che contengono molti più zuccheri di quanto solitamente si pensi, oppure di quelli che ci sorprendono perché, comunemente, si crede che non ne contengano affatto, mentre ne hanno una seppur modesta quantità. Teniamo presente che un cucchiaino di zucchero (*saccarosio*) equivale a circa 5 grammi, 20 Kcal. I valori sono espressi per porzioni, specificando la quantità

ALIMENTO	Sorbetto al limone confezionato	Bevanda tipo aranciata o cola (*valori medi*)	Acqua tonica*	Succo di frutta confezionato (*albicocca e pera*)	Energy drink*	Yogurt da bere (*fragola*)*	Bevanda confezionata a base di tè*	Succo di mela*	Cioccolato fondente	Bastoncini di crusca di frumento* (*da colazione*)	Mais dolce in scatola sgocc.	Panino di grano duro* (*confezionato*)	Salsa Tomato ketchup	Crackers alla soia	Salsa di soia
PORZIONE	1 sorbetto (*100 g*)	Una lattina (*330 cc*)	Una lattina (*330 cc*)	200 ml	Una lattina (*250 ml*)	Bottiglietta monouso (*200g*)	Bicchierino (*200 ml*)	200 ml	8 quadretti piccoli (*30 g*)	40 g	Una porzione (*100 g*)	Un panino (*70 g*)	Un cucchiaio (*14 g*)	Un pacchettino (*25 g*)	Un cucchiaio (*6 g*)
Carboidrati (*grammi*)	34,2	34	29	29	27,5	26,8	22	19	14,9	19,2	19,5	32,8	3,4	16,9	0,5
di cui ZUCCHERI (*grammi*)	34,2	34	29	29	27,5	24,8	20	18	14,9	7,2	4,3	4	3,2	1,6	0,5
Proteine (*grammi*)	0,9	tracce	0	0,6	0	6	0	0,4	2	5,6	3,4	7,4	0,3	3,3	0,5
Grassi (*grammi*)	tracce	0	0	0,2	0	2,6	0	0	10	1,4	1,3	4	tracce	2,9	0
Energia (*kcal*)	132	127	112	112	112	154	88	78	154	134	98	201	14	103	4

Fonte: Valori ricavati da dati INRAN; * valori ricavati dalle etichette nutrizionali

D'ARCO

Source: [Zucchero ovunque – Nutrizionista Francesca D'Amore (nutrizionedamore.it)] [30.06.2023]

Source : [Coca-Cola, quante zollette di zucchero contiene una lattina? (ilfattoalimentare.it)]
[30.06.2023]

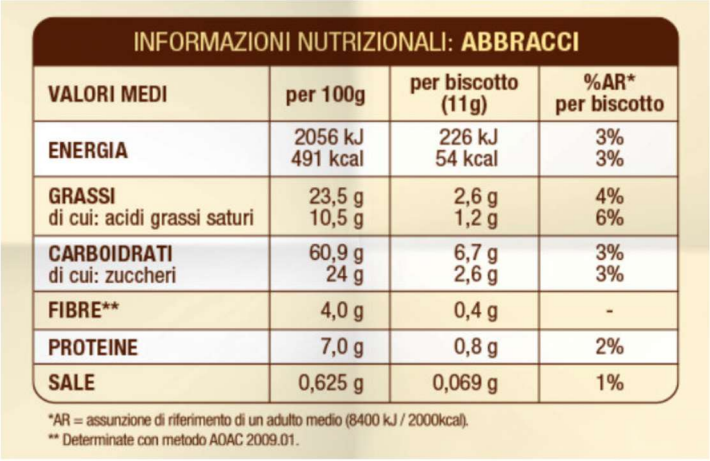
Source: Dr.ssa Claudia Lippolis Biologa Nutrizionista | Facebook [30.06.2023]

Appendix 2

PHASE 2: QUANTITY ANALYSIS

Some examples of nutritional tables in which sugar content is given

(Source: own photos)

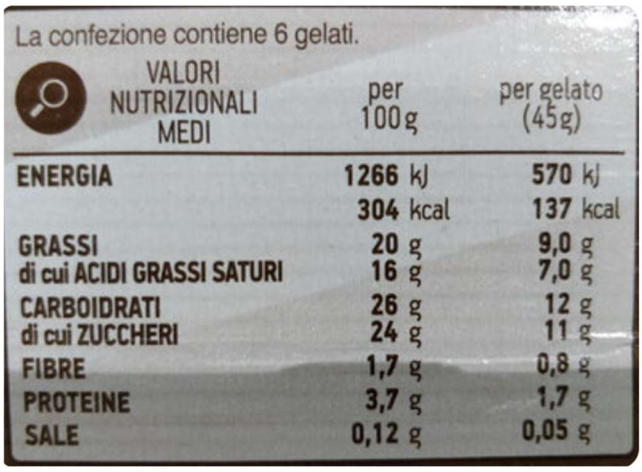


INFORMAZIONI NUTRIZIONALI: **ABBRACCI**			
VALORI MEDI	**per 100g**	**per biscotto (11g)**	**%AR* per biscotto**
ENERGIA	2056 kJ 491 kcal	226 kJ 54 kcal	3% 3%
GRASSI di cui: acidi grassi saturi	23,5 g 10,5 g	2,6 g 1,2 g	4% 6%
CARBOIDRATI di cui: zuccheri	60,9 g 24 g	6,7 g 2,6 g	3% 3%
FIBRE**	4,0 g	0,4 g	-
PROTEINE	7,0 g	0,8 g	2%
SALE	0,625 g	0,069 g	1%

*AR = assunzione di riferimento di un adulto medio (8400 kJ / 2000kcal).
** Determinate con metodo AOAC 2009.01.

DICHIARAZIONE NUTRIZIONALE	per 100 g	per porzione (6 g) (2 crackers)
Energia	1841 kJ 440 kcal	111 kJ 26 kcal
Grassi di cui acidi grassi saturi	12,0 g 9,0 g	0,7 g 0,5 g
Carboidrati di cui zuccheri	72,0 g 8,0 g	4,3 g 0,5 g
Fibre	2,0 g	0,1 g
Proteine	10,0 g	0,6 g
Sale	0,04 g	0 g
Vitamina B1 (Tiamina)	0,6 mg (120%)*	0,04 mg (7%)*

* Valori Nutritivi di riferimento per lattanti e bambini nella prima infanzia
La confezione contiene 16 porzioni



La confezione contiene 6 gelati.

VALORI NUTRIZIONALI MEDI	per 100 g	per gelato (45 g)
ENERGIA	**1266** kJ	**570** kJ
	304 kcal	**137** kcal
GRASSI	**20** g	**9,0** g
di cui ACIDI GRASSI SATURI	**16** g	**7,0** g
CARBOIDRATI	**26** g	**12** g
di cui ZUCCHERI	**24** g	**11** g
FIBRE	**1,7** g	**0,8** g
PROTEINE	**3,7** g	**1,7** g
SALE	**0,12** g	**0,05** g

INFORMAZIONI NUTRIZIONALI			
Valori medi per	100g	biscotto (5,2g)	% GDA* per 5,2g
Valore Energetico	1839 kJ 436 kcal	96 kJ 23 kcal	1%
Proteine	8,5 g	0,4 g	1%
Carboidrati di cui zuccheri	76,5 g 18,5 g	4,0 g 1,0 g	1% 1%
Grassi di cui saturi	10,0 g 4,9 g	0,6 g 0,3 g	<1% 1%
Fibre Alimentari	3,0 g	0,2 g	<1%
Sodio	0,33 g	0,02 g	<1%

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Valori nutrizionali medi per 100 g Nutritional value for 100g	
energia - energy	2620 kJ - 633 kcal
grassi - fat	53,4 g
di cui acidi grassi saturi of which saturates	4,0 g
carboidrati - carbohydrate	16,7 g
di cui zuccheri of which sugars	9,2 g
fibre - fibre	4,5 g
proteine - protein	19,1 g
sale - salt	0,01 g

INFORMAZIONI NUTRIZIONALI Valori medi per 100 ml	
Energia	246 kJ/58kcal
Grassi	0,0 g
di cui acidi grassi saturi	0,0 g
Carboidrati	13,7 g
di cui zuccheri	13,7 g
Fibre	0,8 g
Proteine	0,4 g
Sale	0,0 g

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