Treasure of the Caribbean

Valentina Rodriguez

The **final dish** consisted in **isomalt jewels**, **gelatin coins**, and **piña colada maltodextrin sand**.

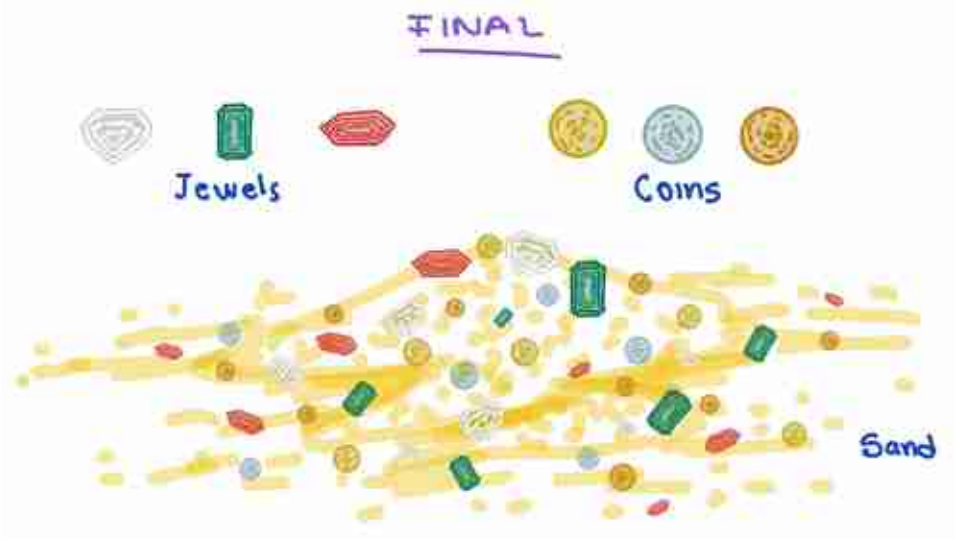

Fig. 2 Initial and final concept. Author: Valentina Rodriguez

MATERIALS & METHODS

NAME: “TREASURE OF THE CARIBBEAN”

Isomalt jewels

There are three batches of jewels, one is green-citronella, other is red-watermelon, and one is colorless-passion fruit. Each batch is made with 100g of isomalt with 10g of water.

Ingredients

- 100g isomalt (Louis François) (300g total)
- 10g water (30g total)
- 0.75g citronella flavouring (Sosa)
- 0.75g watermelon flavouring (Sosa)
- 0.75g passion fruit flavouring (Sosa)
- 0.5g green gel colouring (Cake Decorations)
- 0.5g red gel colouring (Cake Decorations)

Equipment

- Small pans
- Bowls
- Candy thermometer
- Silicon mold (jewel shaped)
- Spatula
- Silicon mat
- Scale
- Metal spoon

Fig. 3 Ingredients & Equipment for isomalt jewels

Methods

1. Mix 100g of isomalt with 10g of water in a pan.
2. Heat until it reaches 170 °C in the candy thermometer.
3. Add flavouring and colouring. Only passion fruit has no added colouring.
4. Pour over the silicon mould, and scrape the excess with the spatula.
5. Wait 20min at room temperature, then demould.
6. Using a knife, cut the excess borders of each jewel.
7. Reheat the leftovers and repeat from step 4 onward.
8. Repeat with the next 100g of isomalt for the next colour and flavour.

Fig. 4 Isomalt jewels process

Gelatin coins

There are two batches of coins, one is golden lemon, and the other is silver and bronze yuzu.

Ingredients

- 22.5g water (45g total)
- 5g gelatine sheets (Newforge) (10g total)
- 16g isomalt (Louis François) (36g total)
- 6g water (12g total)
- 20g glucose syrup (Belgosuc) (40g total)
- 1g citric acid (Louis François) (2g total)
- 0.75g lemon flavouring (Sosa)
- 0.75g yuzu flavouring (Sosa)
- 1g gold spray (Via delle Arti)
- 0.5g silver spray (Via delle Arti)
- 0.5g bronze spray (MSK)

Equipment

- Silicon mould
- Silicon mat
- Blast Chiller
- Bowls
- Pans
- Thermomix
- Scale
- Metal spoon
- Spatula
- Knife

Fig. 5 Ingredients & Equipment for gelatine jewels

Methods

1. Cut gelatine sheets in Thermomix until achieving small pieces.
2. Hydrate them in 22.5g of water for 15 min.
3. In a pan, add isomalt and water (6g) until bubbly and thickened. Turn off.
4. Add hydrated gelatine, glucose, and citric acid. Reheat if needed to fully dissolve.
5. Add flavouring
6. Rest for 15min to remove air bubbles.
7. Pour over the silicon mould and scrape with a spatula the excess.
8. Blast chill at 1°C for 25min.
9. Demould and cut excess with a knife.
10. Coat them with a colouring spray and blast chill at 1°C for 15min to dry.

Fig. 6 Gelatin coins process

Maltodextrin sand

This recipe makes 1 batch of maltodextrin sand.

Ingredients

- 10g refined coconut oil (KTC)
- 36g maltodextrin 12DE (Sosa)
- 1g yellow colouring (MSK)
- 1g pineapple flavouring (Sosa)
- 1g coconut flavouring (Sosa)

Equipment

- Pan
- Scale
- Spoon

Methods

1. Melt the coconut oil at low heat.
2. Add colouring and both flavourings and mix well.
3. Add maltodextrin while stirring to avoid clumps.

Fig. 7 Maltodextrin sand ingredients, equipment, and process

Final assembly

Ingredients

- 33.6g of isomalt jewels (passion fruit, watermelon, citronella)
- 30.2g gelatine coins (lemon, yuzu)
- 32g piña colada maltodextrin sand

Equipment

- Plate
- Bowls
- Scale

Methods

1. Scatter the sand around, forming a dune at the top.
2. Add gelatine coins over the dune and on the sides, alternating the colours.
3. Add the assorted isomalt jewels on the dune and sides.

Fig. 8 Treasure of the Caribbean ingredients, equipment, and methods

Other Methods

Nutritional

Nutritics software was used to calculate the calories and nutrition of each component and the final dish. For this, four recipes were created, corresponding to the three components and assembled plate. However, there was no nutritional information about the flavourings and colorings in the software, and since the amount is so small is considered negligible. To create each recipe, the quantity of each ingredient is added, and conversion factor is applied if needed. For example, for isomalt jewels (**Fig. 8**) a conversion factor of 0.9 is used because it boils until reaching the hard crack point at 170 °C.

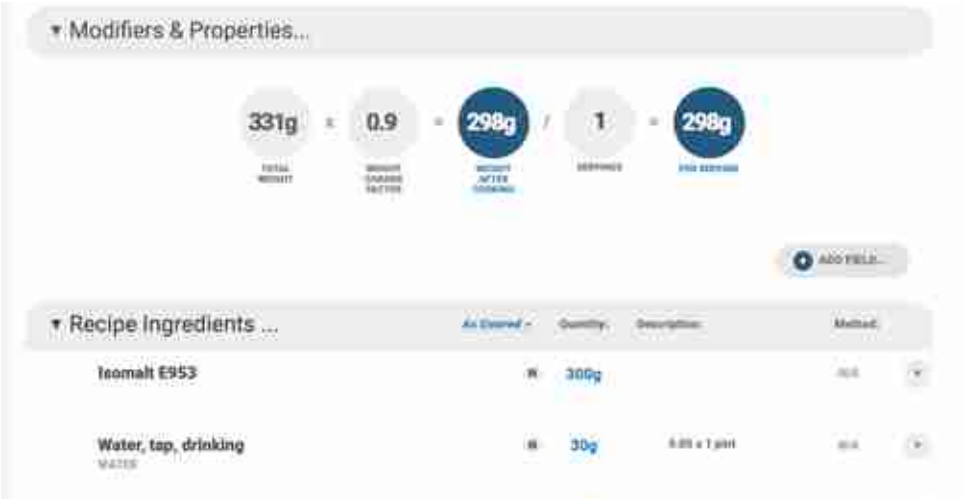

Fig. 9 Isomalt jewels nutritics recipe

Since the boiling was very short to make the gummies, the conversion factor is 0.97 (**Fig. 10**).

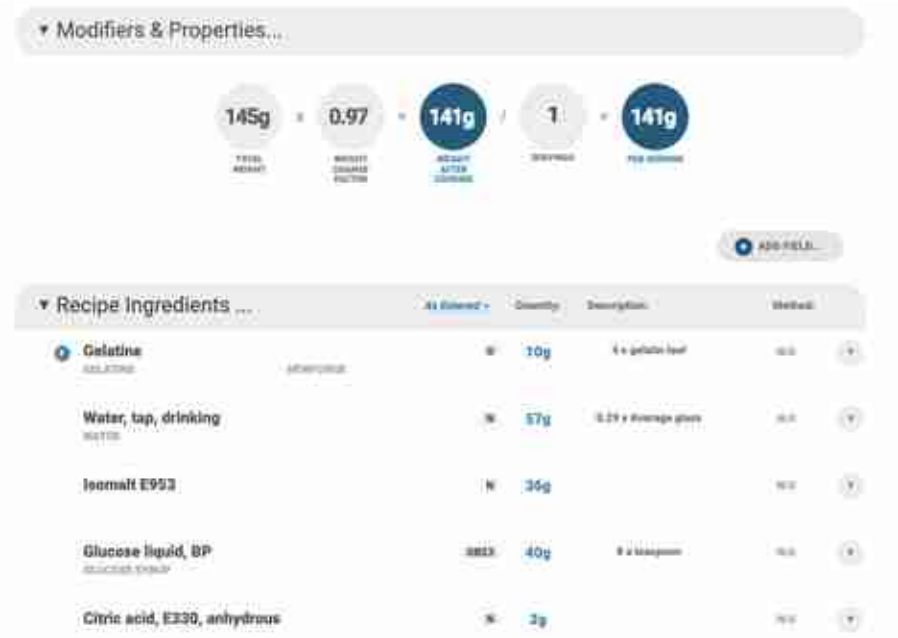

Fig. 10 Gelatine coins nutritics recipe

For the maltodextrin sand, there was no cooking involved so the conversion factor is 1 (**Fig. 11**).

Fig. 11 Maltodextrin sand nutritics recipe

The final dish does not involve cooking; thus, the conversion factor is 1 as well (**Fig. 12**).

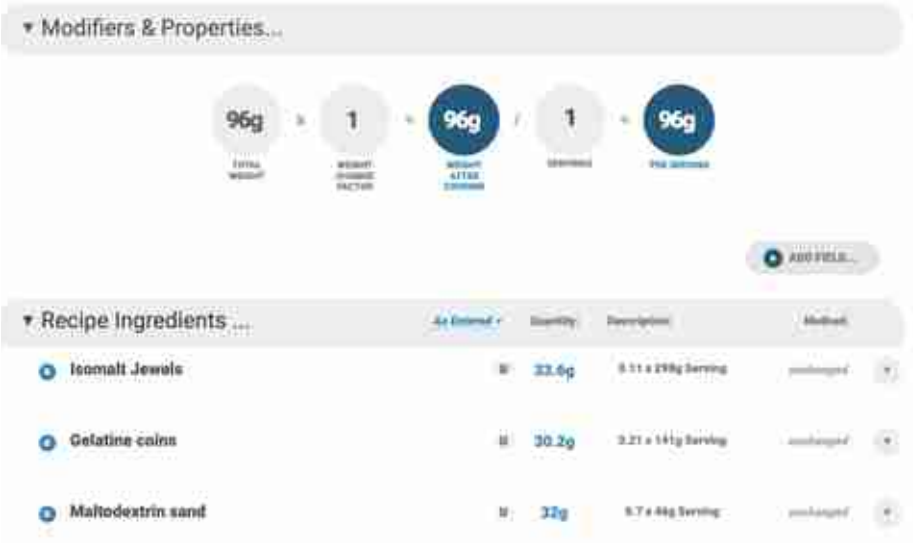

Fig. 12 Treasure of the Caribbean nutritics recipe

Additionally, a recipe for sucrose jewels was created to compare with the isomalt jewels. The only change is the sugar source (**Fig. 13**). Also, a sucrose version of the gelatine coins was created as well. (**Fig. 14**).

Fig. 13 Sucrose jewels nutritics recipe

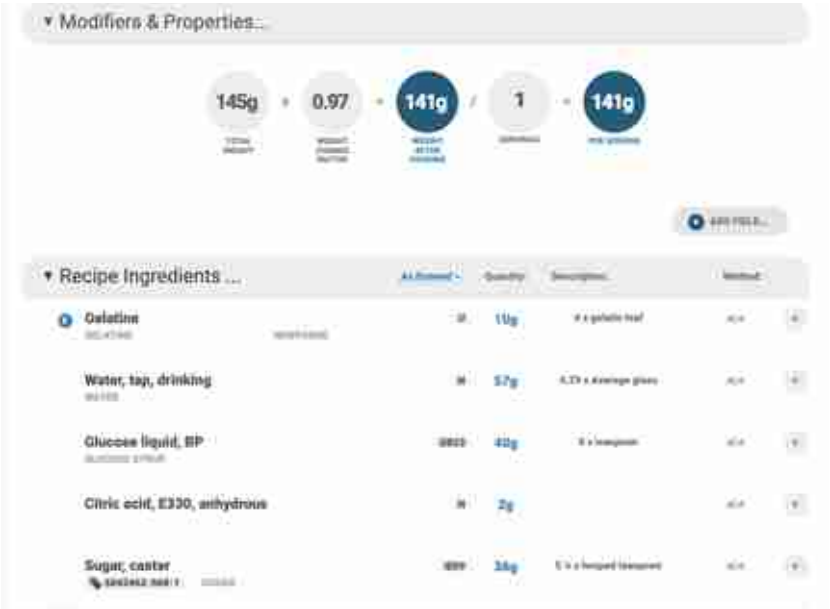

Fig. 14 Sucrose gelatin coins nutritics recipe

Costing

Excel was the software used to calculate the costing. For this, a database was created with all ingredients and its cost per gram. Then, the price per gram of each component was calculated (sum of costs/ total grams). Finally, the quantity of each component in the final dish was multiplied by its price per gram, obtaining the final cost for the dish. Additionally, an agar version and sucrose version of the coins, and a sucrose version of the jewels were created to compare costs. However, the cost of the flavourings is approximated, since there was no real information of how much they cost. The costing excel is shown in **Fig. 15**.

DATABASE

Ingredient name	Price per unit (€)	Quantity of the unit (g) or (ml)	Price (€) per g or ml
Isomalt	€ 21.00	2000	€ 0.01
Water			€ 0.00
Citronella flavouring	€ 20.00	100	€ 0.20
Watermelon flavouring	€ 20.00	100	€ 0.20
Passion fruit flavouring	€ 20.00	100	€ 0.20
Green gel colouring	€ 0.20	20	€ 0.01
Red gel colouring	€ 0.16	10	€ 0.02
Gelatine sheets	€ 4.21	50	€ 0.08
Glucose syrup	€ 1.68	300	€ 0.01
Citric acid	€ 0.80	40	€ 0.02
Lemon flavouring	€ 20.00	100	€ 0.20
Yuzu flavouring	€ 20.00	100	€ 0.20
Gold spray	€ 9.97	250	€ 0.04
Silver spray	€ 6.48	250	€ 0.03
Bronze spray	€ 7.39	250	€ 0.03
Coconut oil	€ 2.19	100	€ 0.02
Maltodextrin 12DE	€ 21.45	500	€ 0.04
Yellow colouring	€ 1.99	15	€ 0.13
Pineapple flavouring	€ 20.00	100	€ 0.20
Coconut flavouring	€ 20.00	100	€ 0.20
Agar	€ 26.90	300	€ 0.09
Sucrose	€ 0.23	100	€ 0.00

ISOMALT JEWELS

Ingredient name	Quantity (g)	Price (€) per g or ml	Cost
Isomalt	300	€ 0.01	
Water	30	€ 0.00	
Citronella flavouring	0.75	€ 0.20	
Watermelon flavouring	0.75	€ 0.20	
Passion fruit flavouring	0.75	€ 0.20	
Green gel colouring	0.5	€ 0.01	
Red gel colouring	0.5	€ 0.02	
Total			

SUCROSE JEWELS

Ingredient name	Quantity (g)	Price (€) per g or ml	Cost
Sucrose	300	€ 0.00	
Water	30	€ 0.00	
Citronella flavouring	0.75	€ 0.20	
Watermelon flavouring	0.75	€ 0.20	
Passion fruit flavouring	0.75	€ 0.20	
Green gel colouring	0.5	€ 0.01	
Red gel colouring	0.5	€ 0.02	
Total			

SAND

Ingredient name	Quantity (g)	Price (€) per g	Cost
Coconut oil	10	€ 0.02	
Maltodextrin 12DE	36	€ 0.04	
Yellow colouring	1	€ 0.13	
Pineapple flavouring	1	€ 0.20	
Coconut flavouring	1	€ 0.20	
Total			

ISOMALT GELATINE COINS

Ingredient name	Quantity (g)	Price (€) per g	Cost
Water	57	€ 0.00	
Isomalt	36	€ 0.01	
Gelatine sheets	10	€ 0.08	
Glucose syrup	40	€ 0.01	
Citric acid	2	€ 0.02	
Lemon flavouring	0.75	€ 0.20	
Yuzu flavouring	0.75	€ 0.20	
Gold spray	1	€ 0.04	
Silver spray	0.5	€ 0.03	
Bronze spray	0.5	€ 0.03	
Total			

ISOMALT AGAR COINS

Ingredient name	Quantity (g)	Price (€) per g	Cost
Water	57	€ 0.00	
Isomalt	36	€ 0.01	
Agar	10	€ 0.09	
Glucose syrup	40	€ 0.01	
Citric acid	2	€ 0.02	
Lemon flavouring	0.75	€ 0.20	
Yuzu flavouring	0.75	€ 0.20	
Gold spray	1	€ 0.04	
Silver spray	0.5	€ 0.03	
Bronze spray	0.5	€ 0.03	
Total			

SUCROSE GELATINE COINS

Ingredient name	Quantity (g)	Price (€) per g	Cost
Water	57	€ 0.00	
Sucrose	36	€ 0.00	
Gelatine sheets	10	€ 0.08	
Glucose syrup	40	€ 0.01	
Citric acid	2	€ 0.02	
Lemon flavouring	0.75	€ 0.20	
Yuzu flavouring	0.75	€ 0.20	
Gold spray	1	€ 0.04	
Silver spray	0.5	€ 0.03	
Bronze spray	0.5	€ 0.03	
Total			

TREASURE OF THE CARIBBEAN

Component	Quantity (g)	Price (€) per g	Cost
Jewels	33.6		
Coins	30.2		
Sand	32		
Total			

Fig. 15 Costing excel

RESULTS

TECHNICAL

Fig. 17 shows the final dish, that was made in 5 hours (divided as two and three hours across two weeks) and assembled in 4:30 minutes.

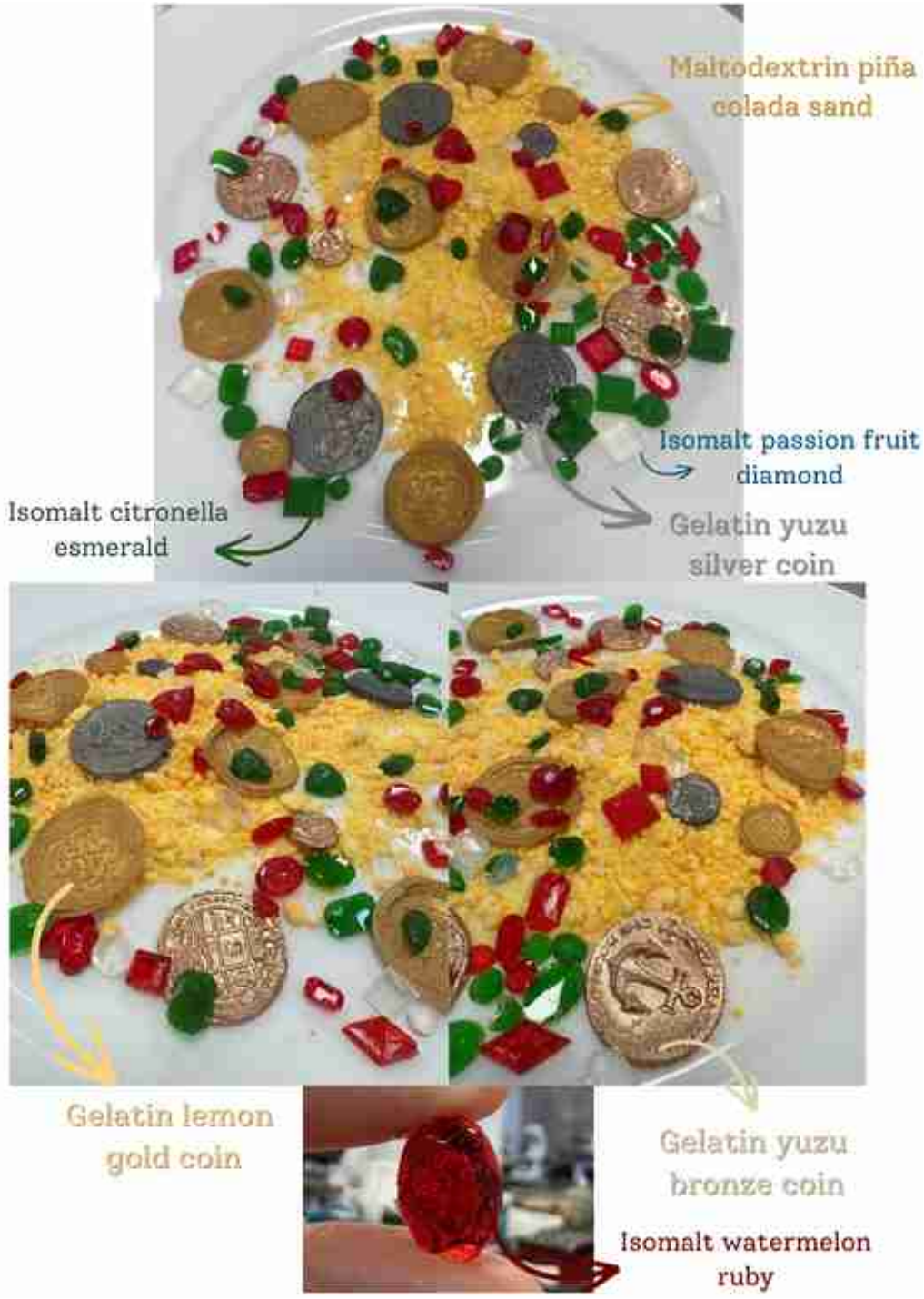

Fig. 17 Treasure of the Caribbean and its components.

NUTRITION

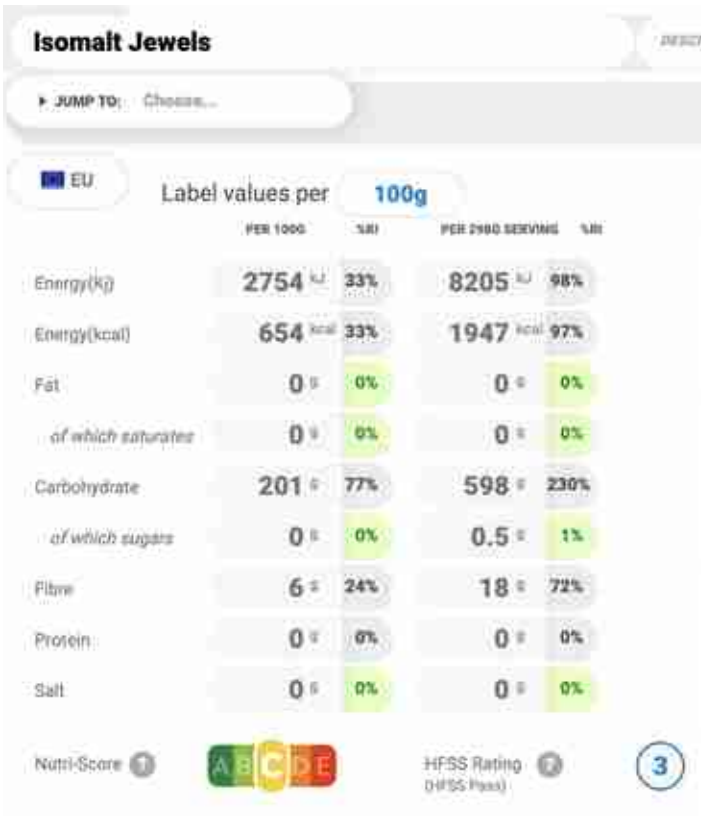

Fig. 18 Isomalt jewels

Fig. 19 Sucrose jewels

Fig. 20 Isomalt gelatine coins

Fig. 21 Sucrose gelatine coins

Fig. 22 Maltodextrin sand

Fig. 23 Treasure of the Caribbean

COSTS

DATABASE

Ingredient name	Price per unit (€)	Quantity of the unit (g) or (ml)	Price (€) per g or ml
Isomalt	€ 21.00	2000	€ 0.01
Water			€ 0.00
Citronella flavouring	€ 20.00	100	€ 0.20
Watermelon flavouring	€ 20.00	100	€ 0.20
Passion fruit flavouring	€ 20.00	100	€ 0.20
Green gel colouring	€ 0.20	20	€ 0.01
Red gel colouring	€ 0.16	10	€ 0.02
Gelatine sheets	€ 4.21	50	€ 0.08
Glucose syrup	€ 1.68	300	€ 0.01
Citric acid	€ 0.80	40	€ 0.02
Lemon flavouring	€ 20.00	100	€ 0.20
Yuzu flavouring	€ 20.00	100	€ 0.20
Gold spray	€ 9.97	250	€ 0.04
Silver spray	€ 6.48	250	€ 0.03
Bronze spray	€ 7.39	250	€ 0.03
Coconut oil	€ 2.19	100	€ 0.02
Maltodextrin 12DE	€ 21.45	500	€ 0.04
Yellow colouring	€ 1.99	15	€ 0.13
Pineapple flavouring	€ 20.00	100	€ 0.20
Coconut flavouring	€ 20.00	100	€ 0.20
Agar	€ 26.90	300	€ 0.09
Sucrose	€ 0.23	100	€ 0.00

ISOMALT JEWELS

Ingredient name	Quantity (g)	Price (€) per g or ml	Cost
Isomalt	300	€ 0.01	€ 3.15
Water	30	€ 0.00	€ 0.00
Citronella flavouring	0.75	€ 0.20	€ 0.15
Watermelon flavouring	0.75	€ 0.20	€ 0.15
Passion fruit flavouring	0.75	€ 0.20	€ 0.15
Green gel colouring	0.5	€ 0.01	€ 0.01
Red gel colouring	0.5	€ 0.02	€ 0.01
Total	**333.25**	**€ 0.01**	**€ 3.61**

SUCROSE JEWELS

Ingredient name	Quantity (g)	Price (€) per g or ml	Cost
Sucrose	300	€ 0.00	€ 0.69
Water	30	€ 0.00	€ 0.00
Citronella flavouring	0.75	€ 0.20	€ 0.15
Watermelon flavouring	0.75	€ 0.20	€ 0.15
Passion fruit flavouring	0.75	€ 0.20	€ 0.15
Green gel colouring	0.5	€ 0.01	€ 0.01
Red gel colouring	0.5	€ 0.02	€ 0.01
Total	**333.25**	**€ 0.00**	**€ 1.15**

SAND

Ingredient name	Quantity (g)	Price (€) per g	Cost
Coconut oil	10	€ 0.02	€ 0.22
Maltodextrin 12DE	36	€ 0.04	€ 1.54
Yellow colouring	1	€ 0.13	€ 0.13
Pineapple flavouring	1	€ 0.20	€ 0.20
Coconut flavouring	1	€ 0.20	€ 0.20
Total	**49**	**€ 0.05**	**€ 2.30**

ISOMALT GELATINE COINS

Ingredient name	Quantity (g)	Price (€) per g	Cost
Water	57	€ 0.00	€ 0.00
Isomalt	36	€ 0.01	€ 0.38
Gelatine sheets	10	€ 0.08	€ 0.84
Glucose syrup	40	€ 0.01	€ 0.22
Citric acid	2	€ 0.02	€ 0.04
Lemon flavouring	0.75	€ 0.20	€ 0.15
Yuzu flavouring	0.75	€ 0.20	€ 0.15
Gold spray	1	€ 0.04	€ 0.04
Silver spray	0.5	€ 0.03	€ 0.01
Bronze spray	0.5	€ 0.03	€ 0.01
Total	**148.5**	**€ 0.01**	**€ 1.85**

ISOMALT AGAR COINS

Ingredient name	Quantity (g)	Price (€) per g	Cost
Water	57	€ 0.00	€ 0.00
Isomalt	36	€ 0.01	€ 0.38
Agar	10	€ 0.09	€ 0.90
Glucose syrup	40	€ 0.01	€ 0.22
Citric acid	2	€ 0.02	€ 0.04
Lemon flavouring	0.75	€ 0.20	€ 0.15
Yuzu flavouring	0.75	€ 0.20	€ 0.15
Gold spray	1	€ 0.04	€ 0.04
Silver spray	0.5	€ 0.03	€ 0.01
Bronze spray	0.5	€ 0.03	€ 0.01
Total	**148.5**	**€ 0.01**	**€ 1.91**

SUCROSE GELATINE COINS

Ingredient name	Quantity (g)	Price (€) per g	Cost
Water	57	€ 0.00	€ 0.00
Sucrose	36	€ 0.00	€ 0.08
Gelatine sheets	10	€ 0.08	€ 0.84
Glucose syrup	40	€ 0.01	€ 0.22
Citric acid	2	€ 0.02	€ 0.04
Lemon flavouring	0.75	€ 0.20	€ 0.15
Yuzu flavouring	0.75	€ 0.20	€ 0.15
Gold spray	1	€ 0.04	€ 0.04
			€ -
Silver spray	0.5	€ 0.03	€ 0.01
Bronze spray	0.5	€ 0.03	€ 0.01
Total	**148.5**	**€ 0.01**	**€ 1.56**

TREASURE OF THE CARIBBEAN

Component	Quantity (g)	Price (€) per g	Cost
Jewels	33.6	€ 0.01	€ 0.36
Coins	30.2	€ 0.01	€ 0.38
Sand	32	€ 0.05	€ 1.50
Total	**95.8**		**€ 2.24**

Fig. 24 Database, individual, and overall costs

CONCLUSIONS

The theme was fulfilled by choosing the main ingredient of each component wisely. For **less calories**, **isomalt** (E 953) replaced sucrose in the jewels and coins, since it is a polyol with a low glycemic index. For **less cost**, **gelatine** was used as the gelling agent in the coins, as it is cheaper than alternatives like agar. For **less production time**, **maltodextrin** transformed coconut oil into sand instantly, and equipment like the **blast chiller** drastically reduced chilling and drying times — from 8h to 25min for the coins, and from 4h to 15min for the metallic sprays. Finally, **flavourings** made the dish palatable, and **colorings** made it visually appealing, both within the permitted levels established by Regulation (EC) 1333/2008.

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