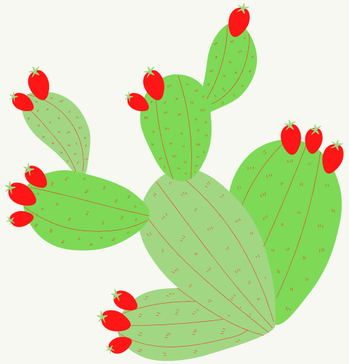
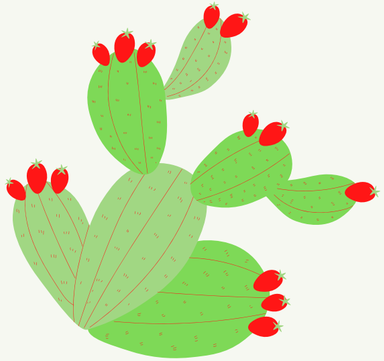
Instituto Mexicano Madero presents:



Nohpalli



TEAM MEMBERS:

Delgado Cano Miguel

Díaz Sánchez Valentina

Lobato Salazar Zoé Altair

Velazquez Crespo Ana Paola

México

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ABSTRACT

Mexico is having trouble tackling one of the UN's Sustainable Development Goals, GOAL 2: Zero Hunger. In Mexico, 59.1% of the population find themselves in some degree of food poverty (2022). At the same time, as surprisingly as it may sound, 23.8% of young people suffer from obesity (2018).

Taking into consideration the previously mentioned statistics, this team has developed a healthy snack made of *nopales* (cacti).

One of the intentions of this project was to verify the nutrients provided by this vegetable in comparison to its counterpart (crisps). Taste acceptance was analyzed through surveys and interviews which allowed the standardization of the process of making and verifying the willingness of classmates to change to healthier products during school breaks.

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INTRODUCTION

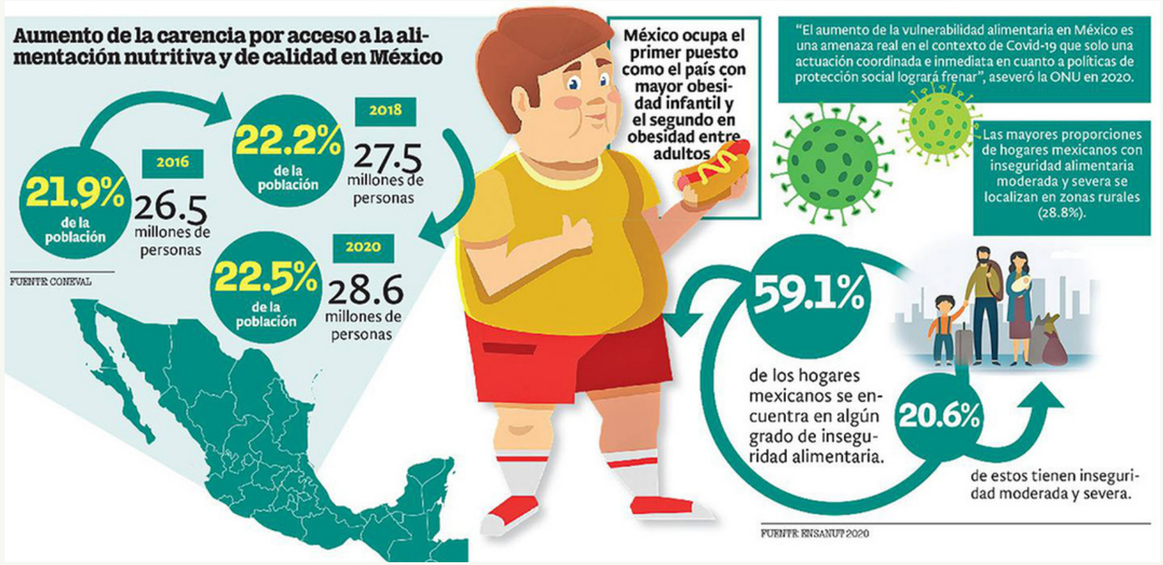

Fig. 1 Hunger in Mexico. Alliance for Food Health (2022)

The Alliance for Food Health places Mexico first place worldwide in childhood obesity (2022), which is why it is important to reflect on what children are eating. In September 2015, the UN presented to its Member States the 2030 Agenda with a list of 17 Sustainable Development Goals which require an urgent call for action.

This project intends to generate proposals regarding SDG 2: Zero Hunger, by providing a healthier alternative to reduce the problem of obesity in our school environment.

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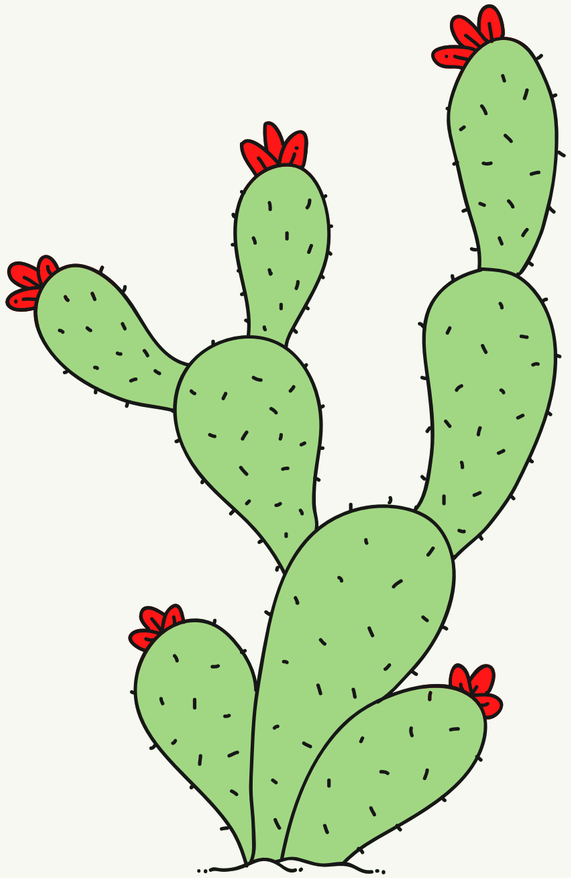
NOHPALLI
Nopal(a) grass

OBJECTIVE

To create a healthy snack made of nopal, with an acceptable flavor, to improve the nutrition of the secondary students at Instituto Mexicano Madero campus Zavaleta during lunch breaks



HYPOTHESIS

The students of the Instituto Mexicano Madero Zavaleta campus will consume good-tasting snacks made of nopal, which will lead them to have a healthier diet.

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THEORETICAL FRAMEWORK

Nopales are a good alternative to be incorporated into a daily diet since they don't have many calories.
A cup of cooked *nopales* contains a high concentration of minerals; such as potassium (291mg), calcium (164mg), and magnesium (47mg), which help maintain the health of our bones, says the Mexican System of Equivalent Food (2014)

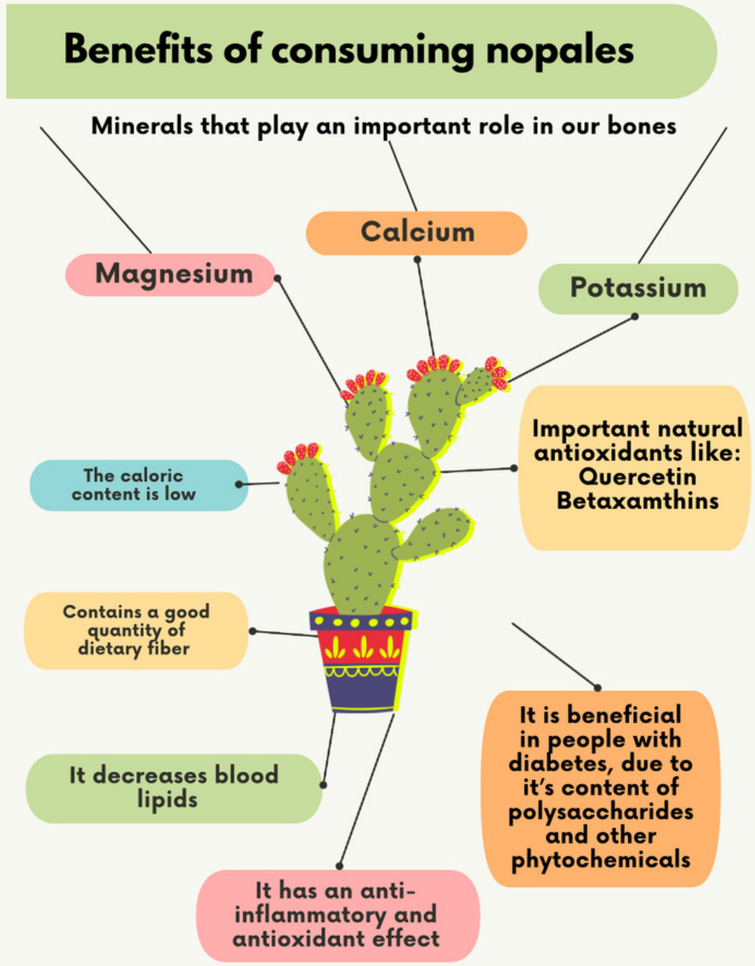

Fig. 2 Benefits of consuming nopales. Díaz Sánchez (2022)

Studies carried out by the National University of Mexico, state that the consumption of *nopales* is highly beneficial due to their content, rich in polysaccharides and other phytochemicals that together provide an anti-inflammatory effect that lowers blood lipids.

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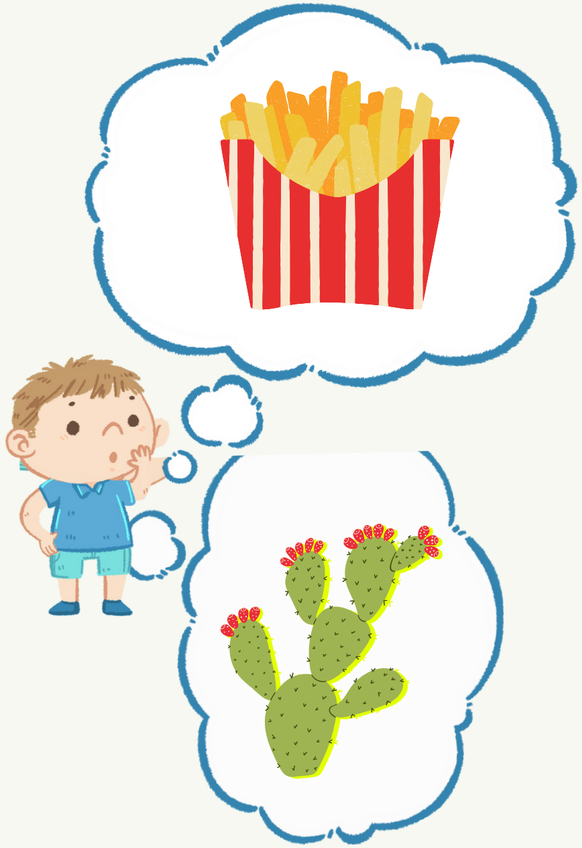
THEORETICAL FRAMEWORK

The Argentine, National University "La Plata" (2016) recommends dehydration as a mean of preservation that maintains almost all the nutritional value of food. Shrinkage or reduction as a result of the process can be seen as an opportunity to resemble the crunchy effect that is sought in the French fries.



Citric acid can be used as a natural preservative, giving a favorable acidulant flavor that resembles the flavor of French fries, mention the Argentine Council for Information and Development of Biotechnology (2022).

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NUTRITIONAL CONTENT

CRISPS	NOPAL SNACK
Mass: 30 grams = 100%	**Mass:** 30 grams = 100%
Fat: 9.2 grams = 30.7%	**Fat:** 0 grams = 0%
Fiber: 1.2 grams = 4%	**Fiber:** 2 grams = 7%
Minerals: 0.2 grams = 0.7%	**Minerals:** 0.5 grams = 1.6%

Fig. 3 Nutritional comparison chart
Delgado Cano (2023)

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METHODOLOGY

Fig. 4 Nopales as raw material
Díaz Sánchez (2023)

Fig. 5 Cutting to a crisps size
Díaz Sánchez (2023)

Fig. 6 Spicy and Citric Acid Seasonings
Díaz Sánchez (2023)

Fig. 7 Dehydration
Díaz Sánchez (2023)

Fig. 8 Finished snack packaging
Díaz Sánchez (2023)

Fig. 9 Snack labeling
Díaz Sánchez (2023)

RESULTS

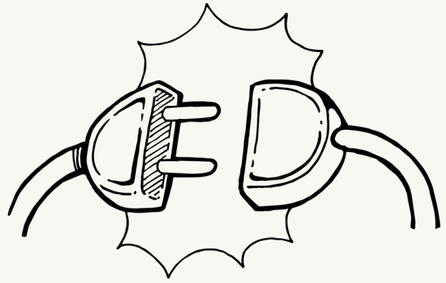
PROCESS STANDARDIZATION

MATERIAL USED

Fig. 10 Citric acid
Cooltiva (2022)

3 nopales (90 g) flavored with citric acid (3 g) and Himalayan salt (2 g)

ENERGY



2 and a half hours at 70 degrees Celsius and occupying 3.7 Kwatts of electrical consumption

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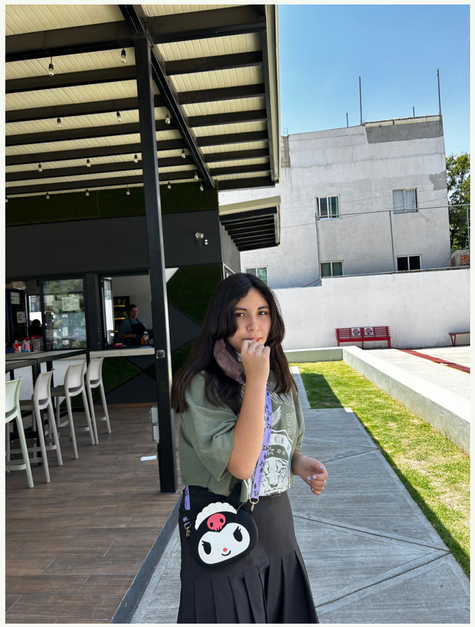
NOHPALLI
Nopal(a) grasa

EVALUATION

A sample of 31 students out of a population of 352, the equivalent of 9%, were approached at the entrance to the school cafeteria, during a break.

The experiment consisted of staying in the cafeteria area and giving nopal snacks to taste; followed by a survey containing 3 questions which resulted in the following observations.



ACCEPTANCE OF THE NOPAL

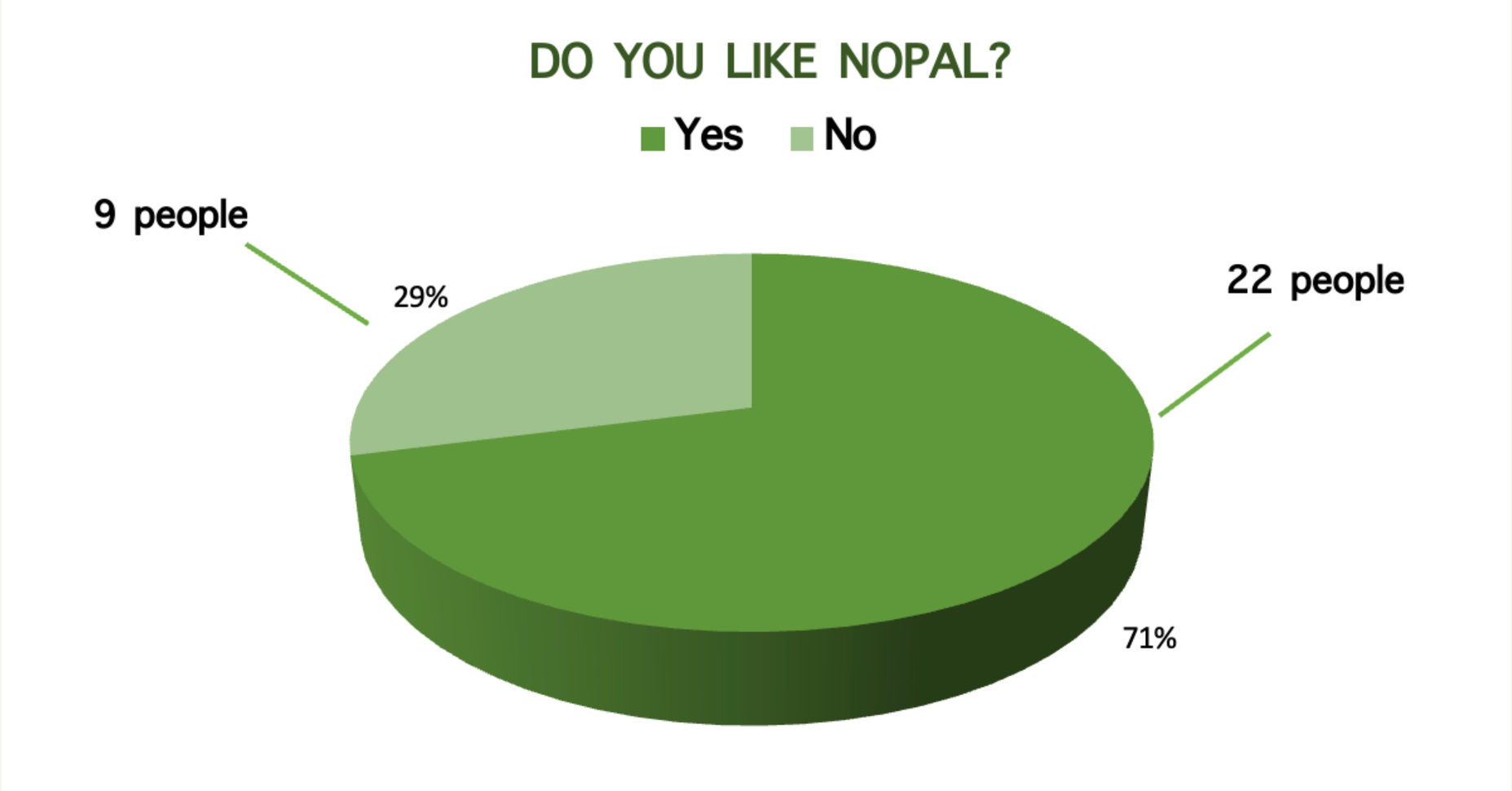


Fig. 11 Graph of acceptance of nopal
Díaz Sánchez (2023)

ACCEPTANCE OF THE HEALTHY SNACK

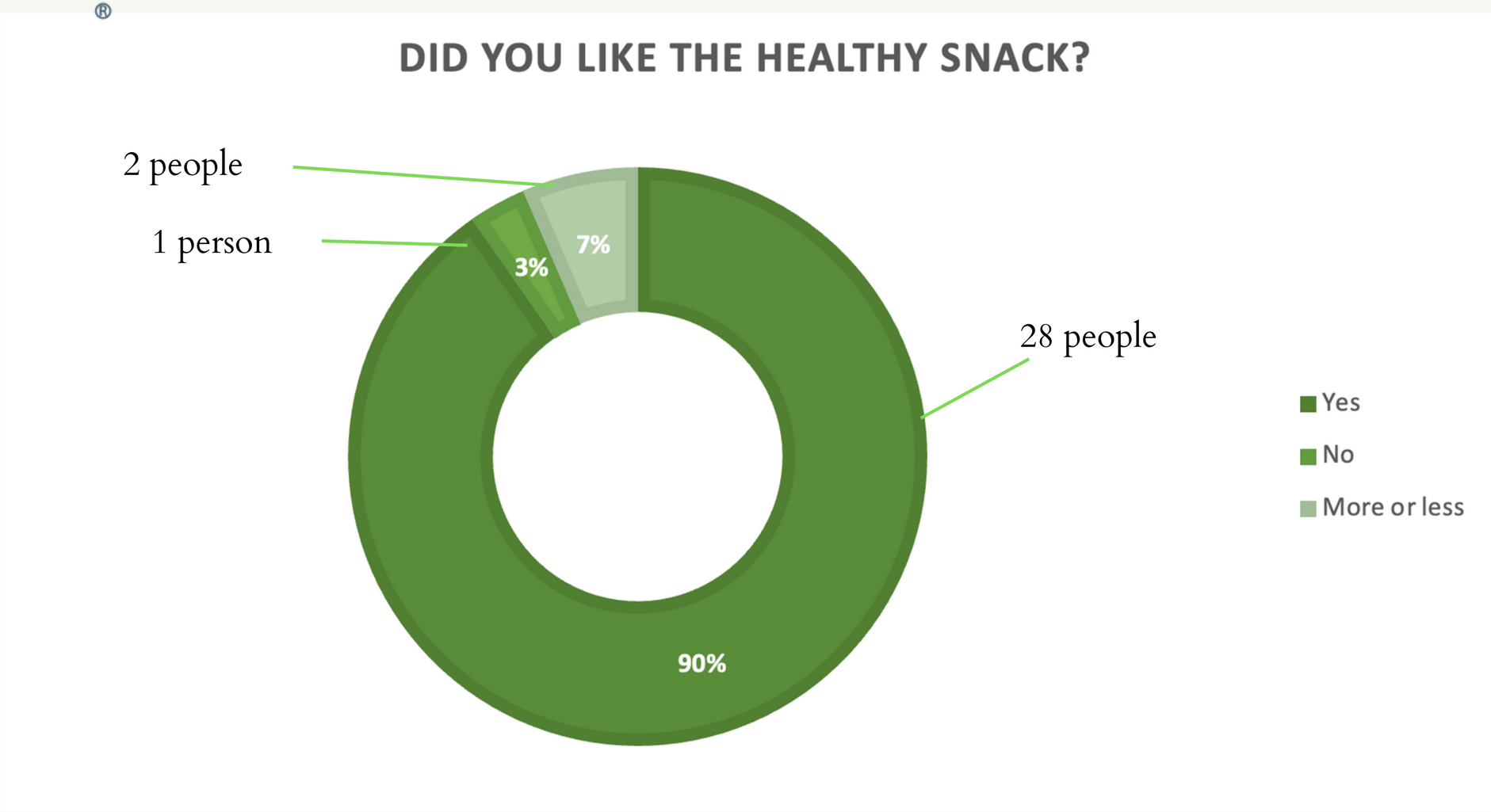


Fig. 12 Graph of the acceptance of the healthy snack

Díaz Sánchez (2023)

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WOULD YOU LIKE TO REPLACE...?

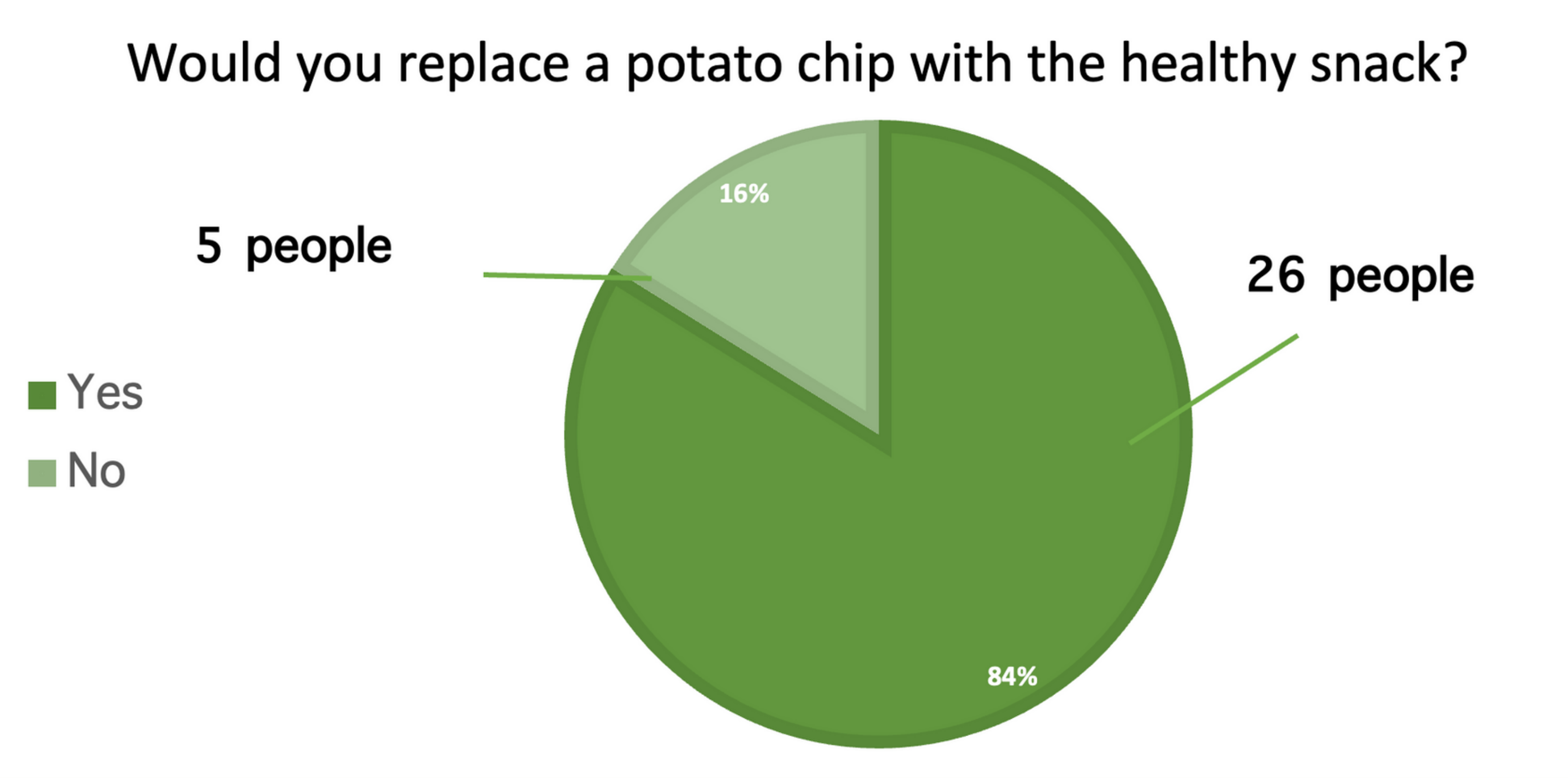

Fig. 13 Graph of the acceptance of the project

Díaz Sánchez (2023)

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CONCLUSIONS

The objective was achieved, by creating a healthy snack with the following recipe:

- 90g of fresh nopales, finely cut into a rectangular shape, sprinkled with 3 grams of citric acid and 2 grams of Himalayan salt, dehydrated at 70 degrees Celsius for 2 and a half hours.

The flavor has an 90% of approval by the secondary students at the Instituto Mexicano Madero, campus Zavaleta.

It is healthy because it reduces the amount of fat contained in crisps by 100%, in addition to having more minerals and fibers than those of the potato.

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