Date Seeds

Submitted by:

Wisam Saleh

Mawadda Jaber

Sarah Awayes

Sali Abu-Kafi

Supervised by:

Dr M. Altamimi

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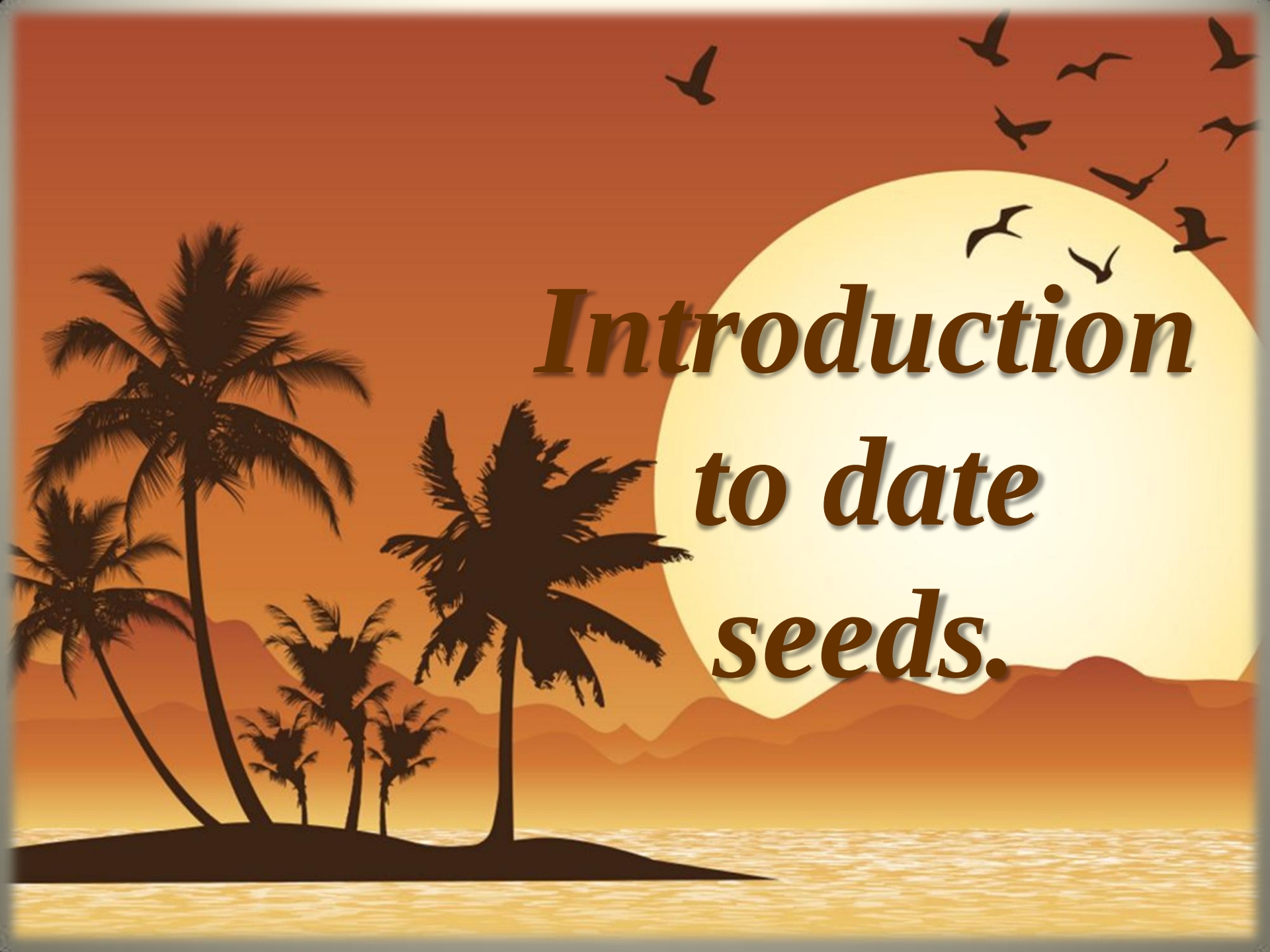
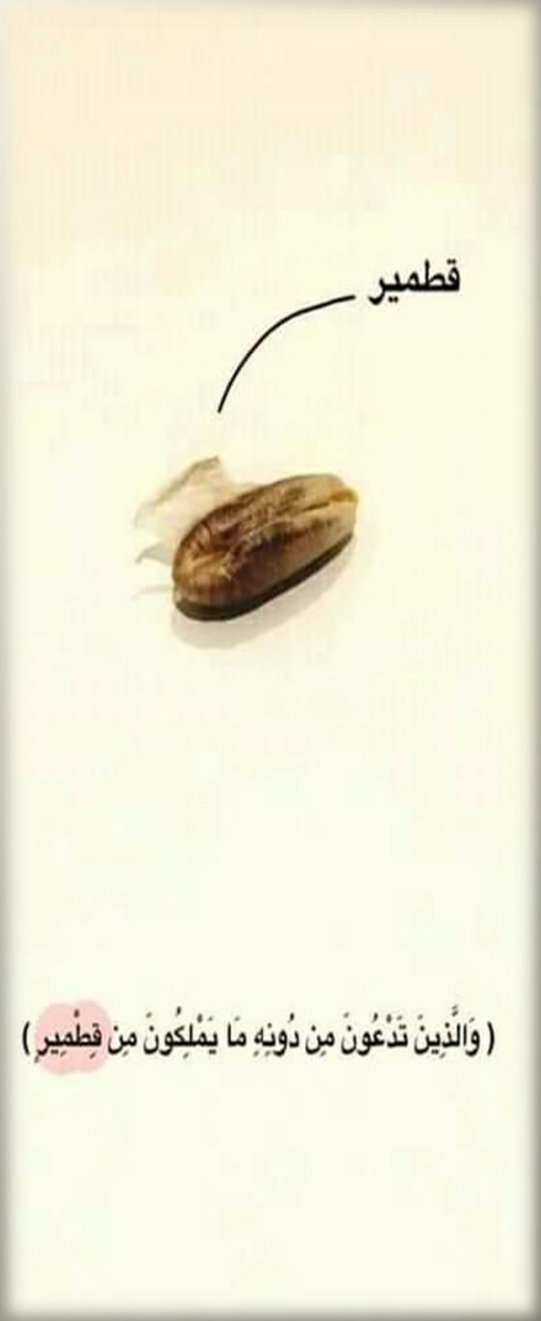

Introduction
to date
seeds.

(قُلْ مَتَاعُ الدُّنْيَا قَلِيلٌ وَالْآخِرَةُ خَيْرٌ لِمَنِ اتَّقَىٰ وَلَا تُظْلَمُونَ فَتِيلًا)

(وَمَنْ يَعْمَلْ مِنَ الصَّالِحَاتِ مِنْ ذَكَرٍ أَوْ أُنْثَىٰ
وَهُوَ مُؤْمِنٌ فَأُولَٰئِكَ يَدْخُلُونَ الْجَنَّةَ
وَلَا يُظْلَمُونَ نَقِيرًا)



(وَالَّذِينَ تَدْعُونَ مِن دُونِهِ مَا يَمْلِكُونَ مِن قِطْمِيرٍ)

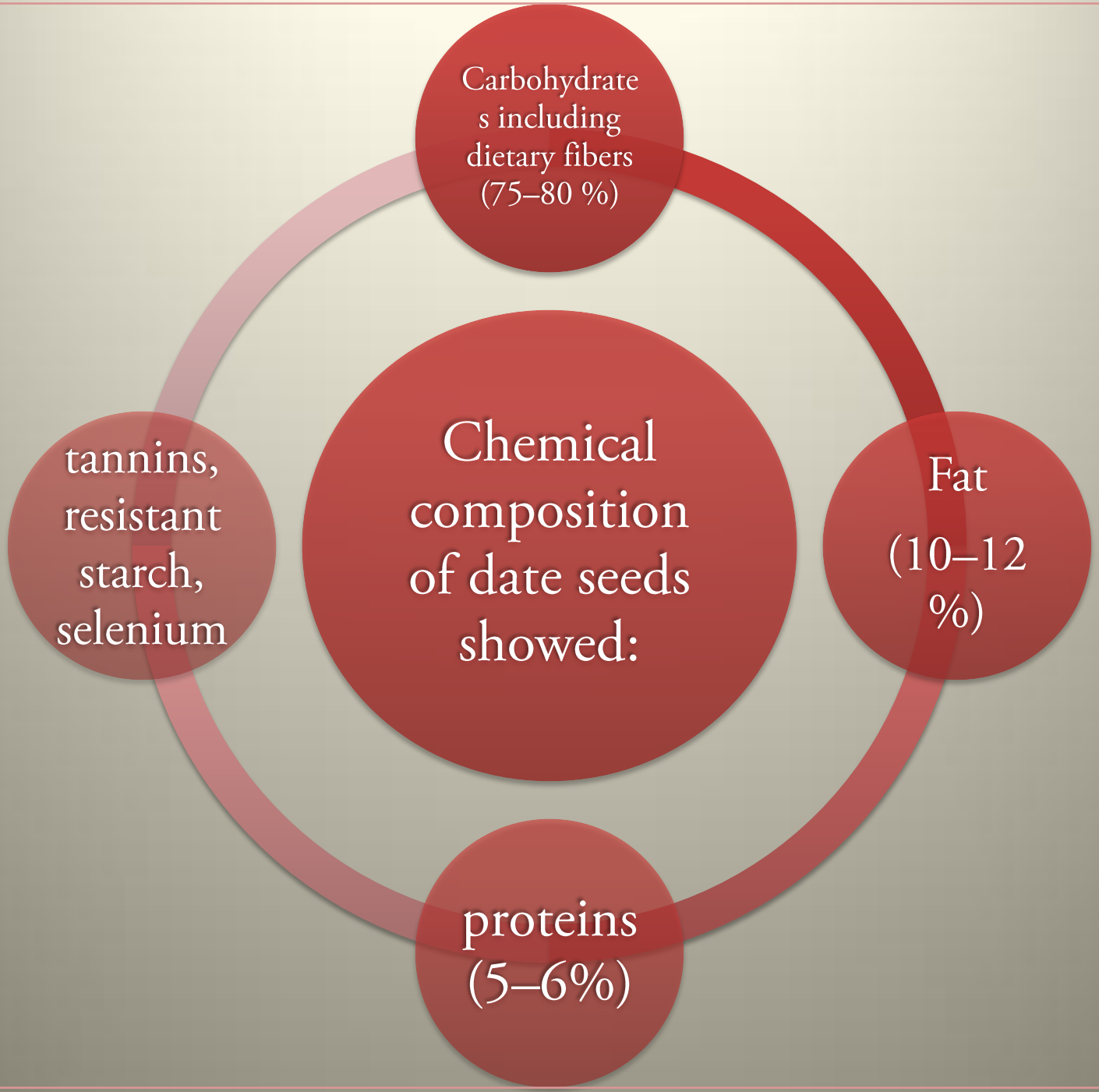
Introduction

- Date seeds considered a waste product of many date processing plants producing pitted dates, date syrup and date confectionery.
- Date seeds (pits) comprise 6–12 % of total weight in date stage (completely ripe date fruit), depending on variety and quality grade.
- Currently, seeds are used mainly for animal feeds in the cattle, sheep, camel and poultry industries.

The aim of the project

- *If the dates seeds are used in animal feed this does not diminish the investment in products that benefit the human health, and the amount of this seeds that are thrown large and do not use all of the feed.*

Byproduct ⟹ Functional Food


Carbohydrates including dietary fibers (75–80 %)
Chemical composition of date seeds showed:
tannins, resistant starch, selenium
Fat (10–12 %)
proteins (5–6%)

The importance of date seeds

- Fibers, whose beneficial effects on intestinal health, cholesterol and glucose metabolism and help in preventing many of the nutrition-related pathologies, including obesity and type 2 diabetes.
- Date seeds were shown to be rich in antioxidants, for which anticancer and antimutagenic properties.
- Higher phenolic content in date seeds .

First experiment: Biscuits Of Date Seeds With Wheat Flour

Tests: Water and Oil Holding Capacity

3 Types of Oil

10 ml Oil

1g of Date Seed

11g
Mixture

Centrifuge

Results

- The following study has used:

sotol pineapple (SP), some agro-residues derived from sotol production (SW), green beans (GB), red (RPPH) and green prickly (GPPH) pear husk, wheat bran (WB), corn flour.

- The results were as follows:

Sample	W.H.C ml/g	O.H.C ml/g
WB	5.2 ± 0.34	2.18 ± 0.18
Corn	2.05 ± 0.09	0.87 ± 0.05
SP	5.09 ± 0.22	1.66 ± 0.1
SW	4.4 ± 0.26	3.32 ± 0.17
GB	9.84 ± 0.04	1.2 ± 0.05
GPPH	7.03 ± 0.07	1.68 ± 0.17
RPPH	7.48 ± 0.7	2.21 ± 0.36

Date seeds + ⇩	O.H.C /W.H.C ml/g
Sunflower oil	2.8315
Canola oil	2.669
Corn oil	2.821
Water	2.608

Dates seeds conversion stages for edible product

Preparation of biscuits

2.5 cup

6:1

0.5 cup

Some difficulties and dealing with them

Problem

Date seeds

- *Collecting*
- *Grinding*

solutions

- ✓ At the beginning, the collection was small and sparse when the dates were available, because it is not the season of dates. But in the end we brought a good quantity from a factory in Jericho.
- ✓ We tried the manual grinding but never succeeded, we resorted to many grinds inside the country did not succeed, the final solution was a feed grind in Tubas.

Problem

Water and Oil.H.C test

The tubes are broken inside the machine.

solutions

- ✓ After repeating the experiment more than once and experimenting with several types of tubes we finally succeeded in choosing very good quality of tubes so that they did not crash.

Second experiment: Biscuits Of Date Seeds With Flour of Chickpeas (Gluten Free Biscuits)

Why was chickpea flour used as an alternative to wheat flour?

- The cause is patients with Celiac Disease, but what is Celiac Disease?

Is an autoimmune disorder that damages or destroys the lining of the intestines in reaction to gluten, which is the protein found in wheat, barley, rye, and sometimes oats.

Preparation of biscuits

2.5 cup

0.5 cup

Texture Analyzer

Gluten free
49590 g

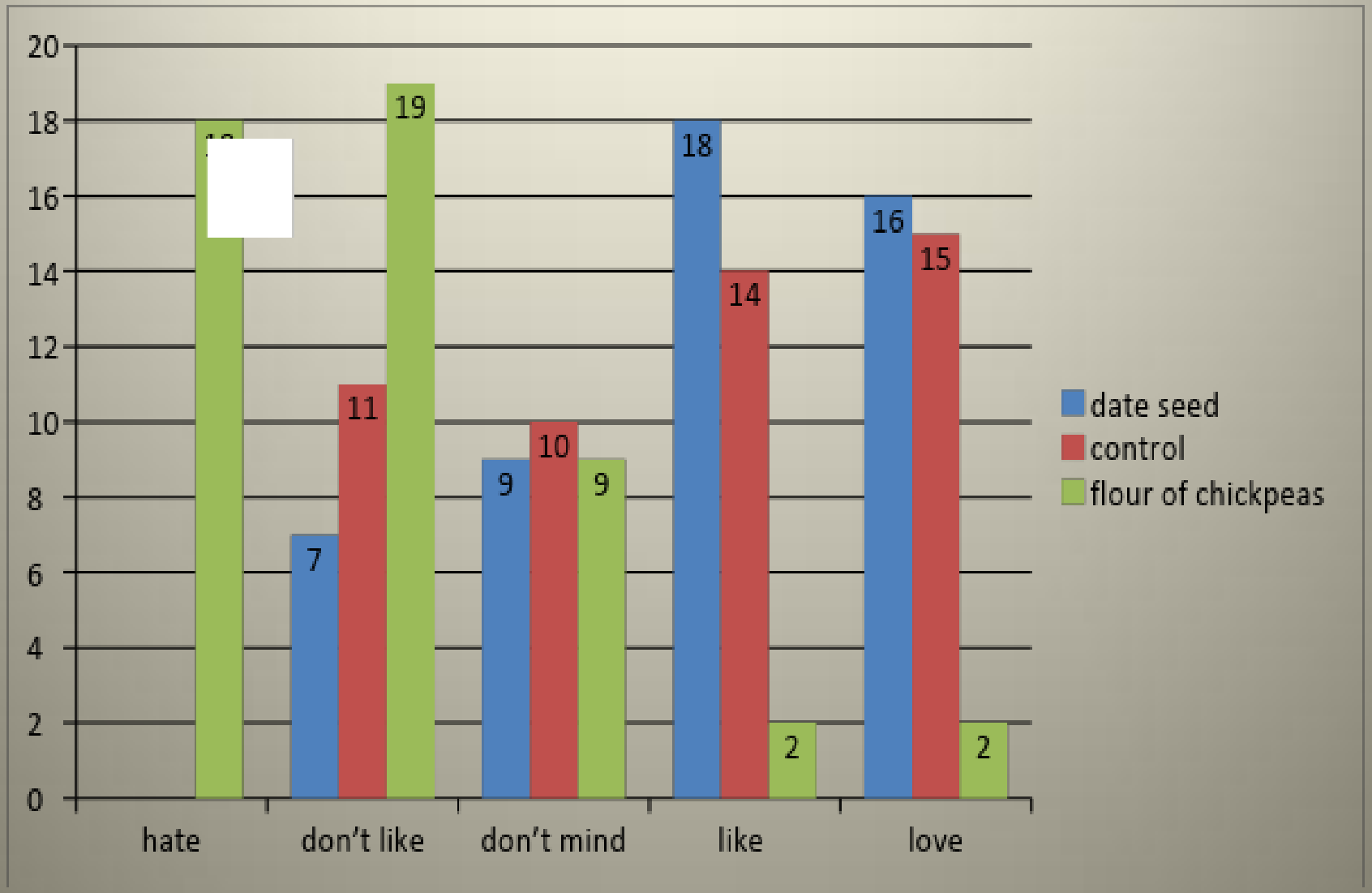
Control
10690 g

Wheat Flour + Dates
Seed Flour
17180 g

Sensory Test

visual analogue scale

Texture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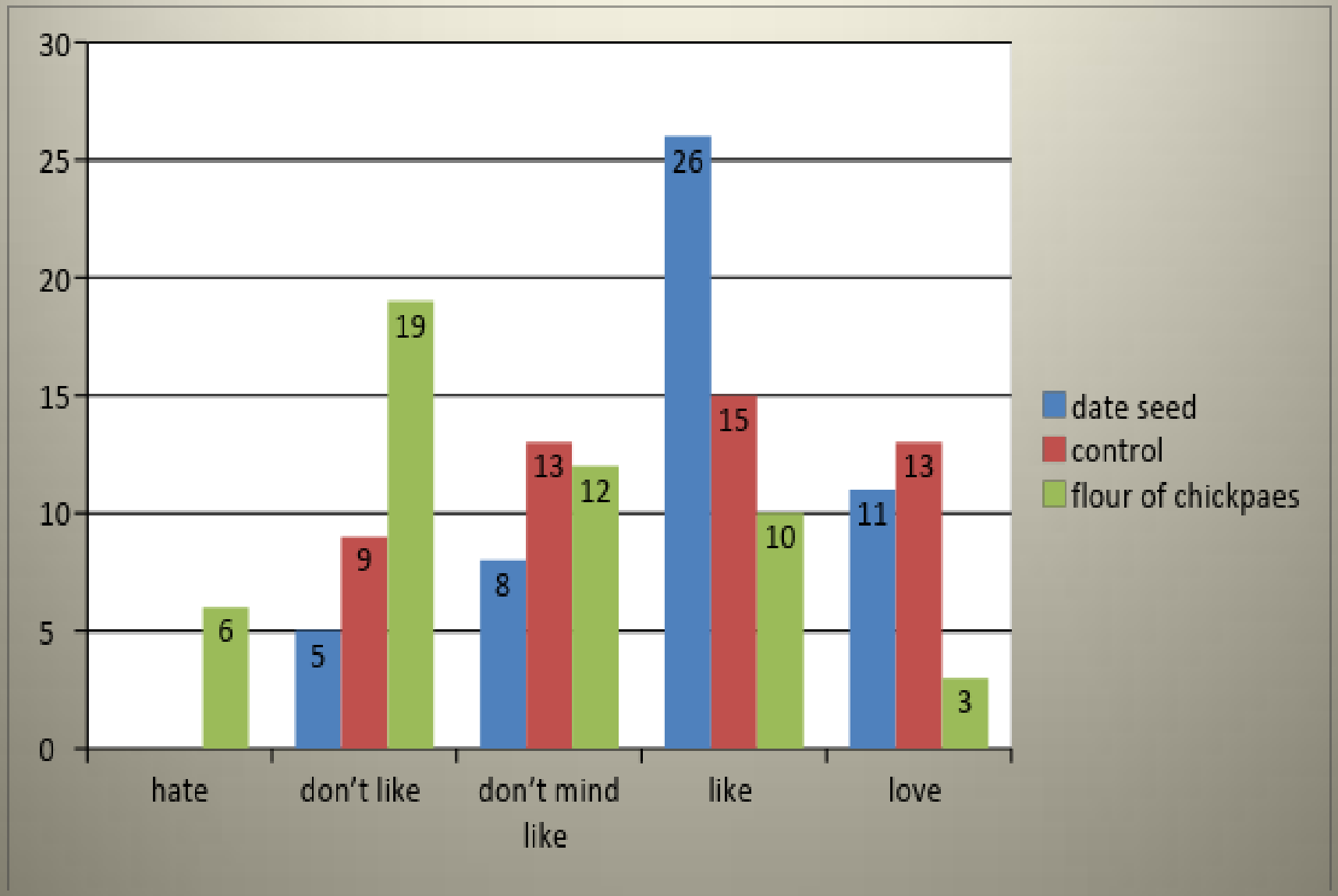
flour of chickpeas

Taste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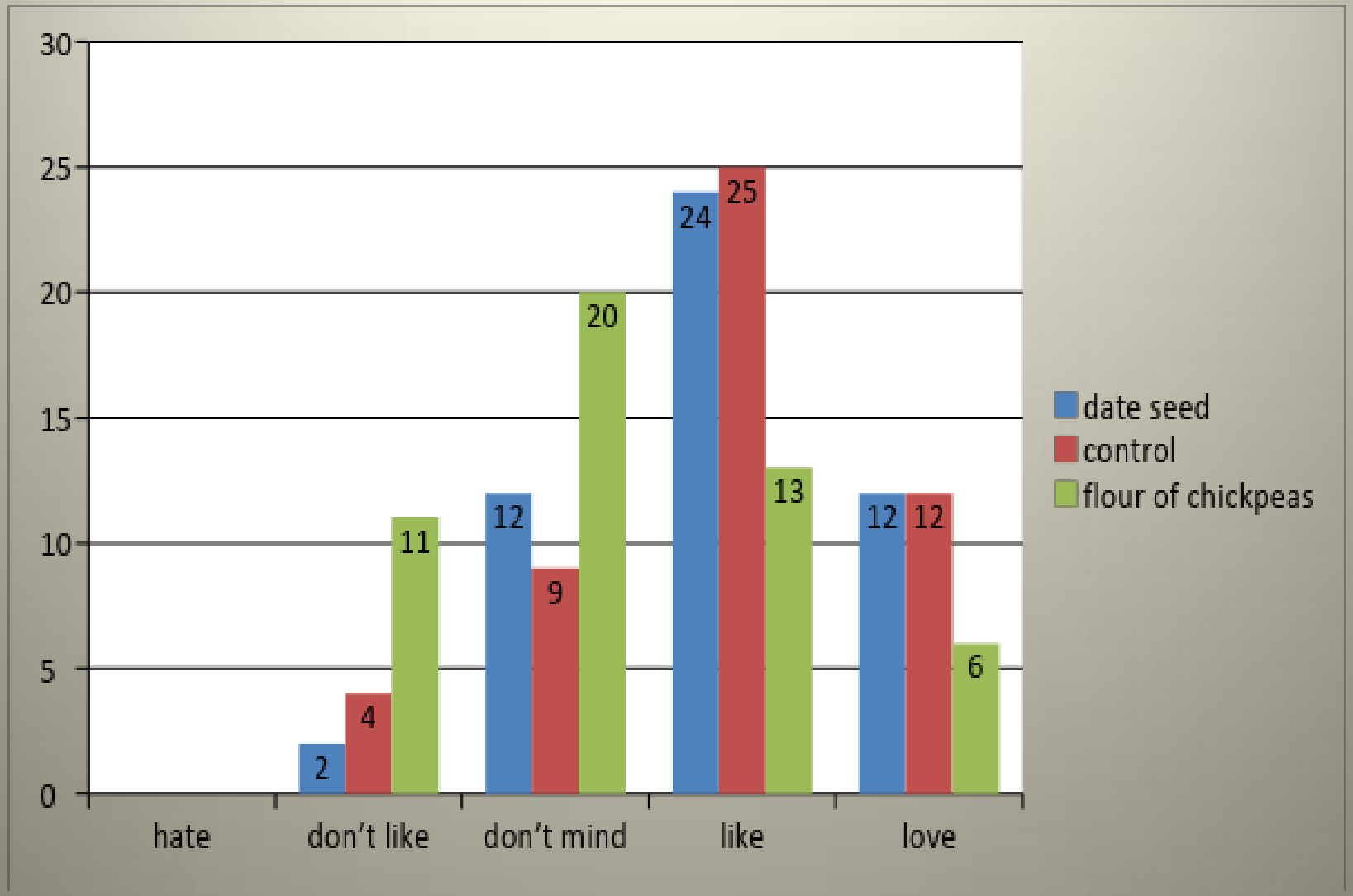
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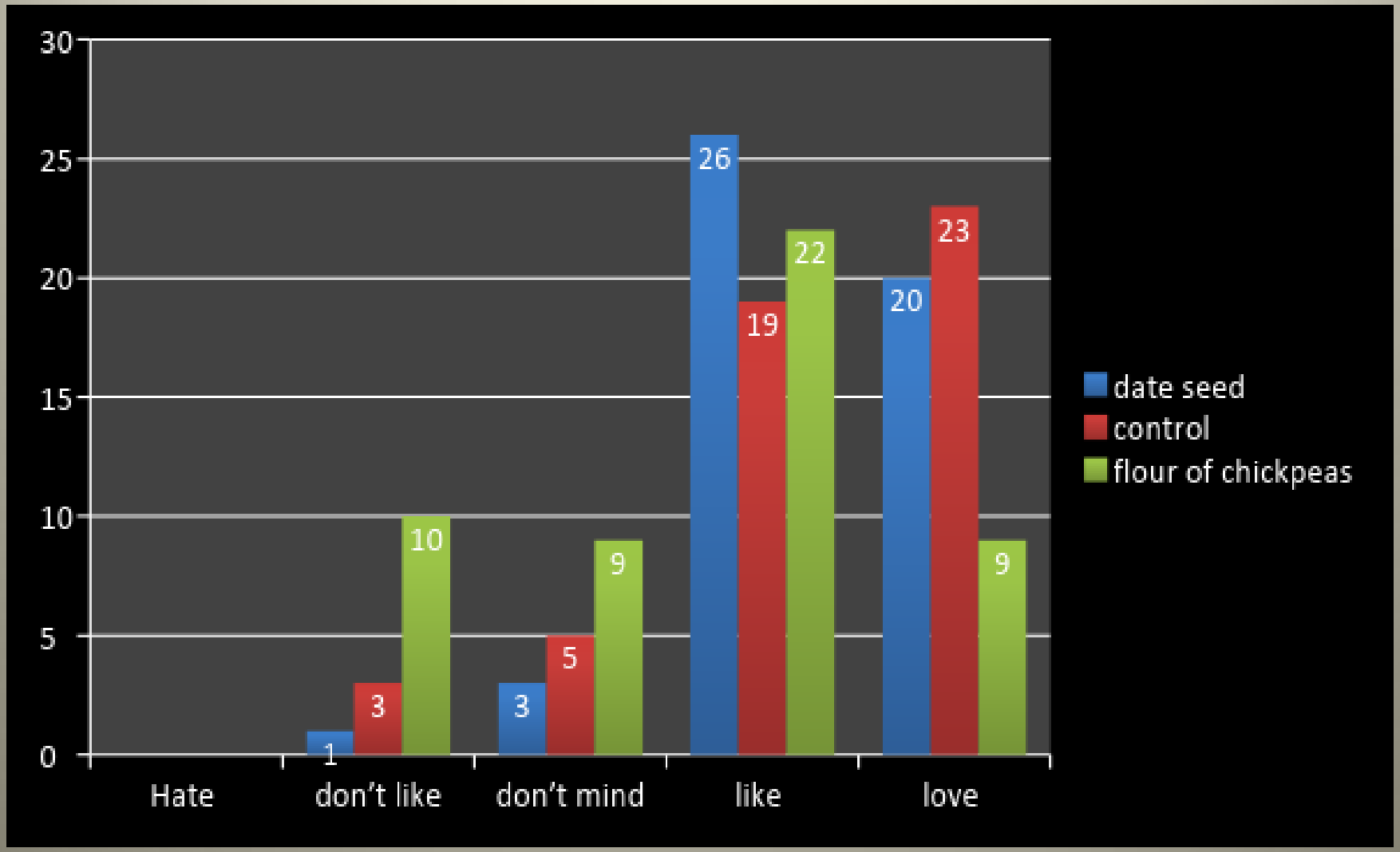
Appearance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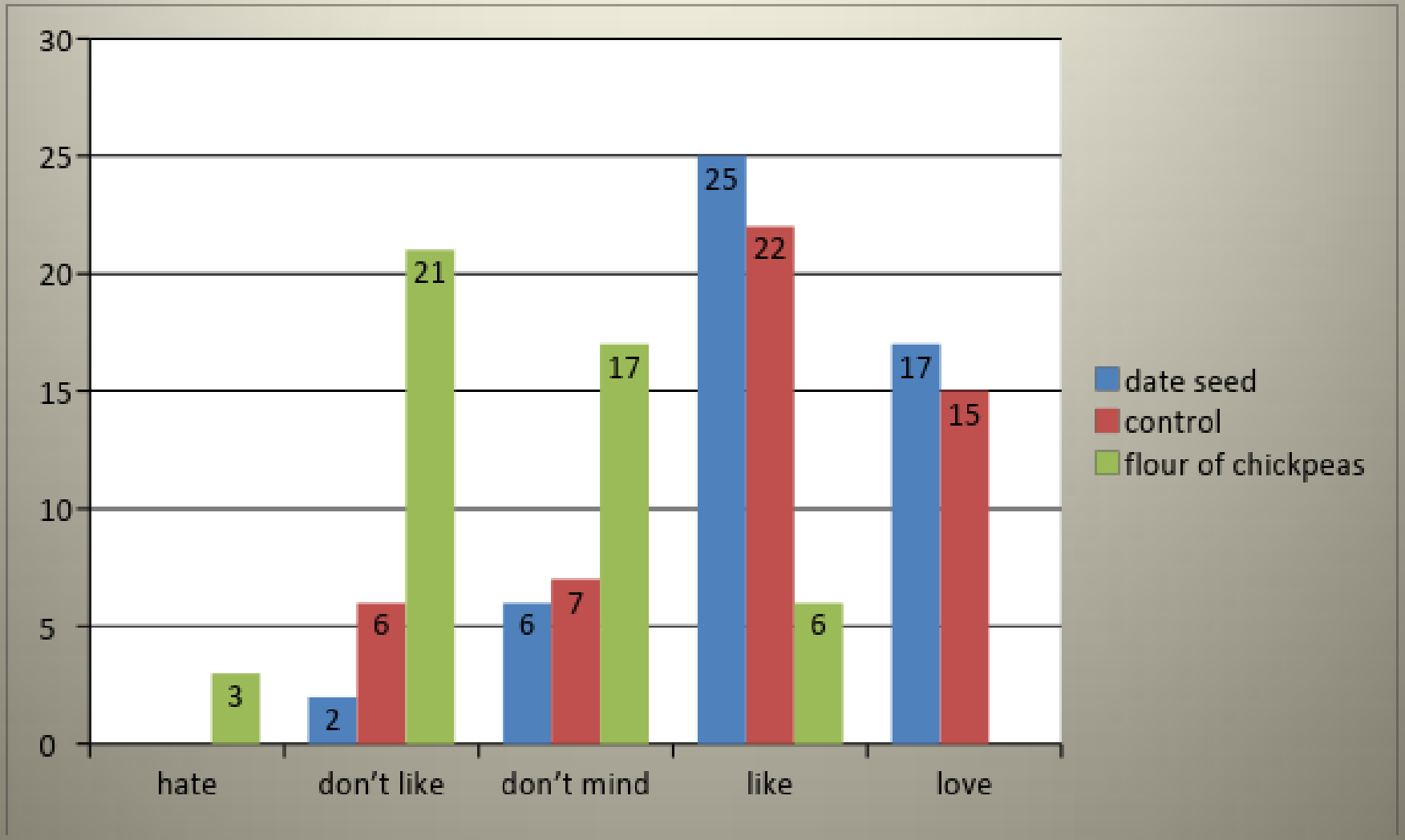
Overall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Some difficulties and dealing with them

Problem

chickpeas

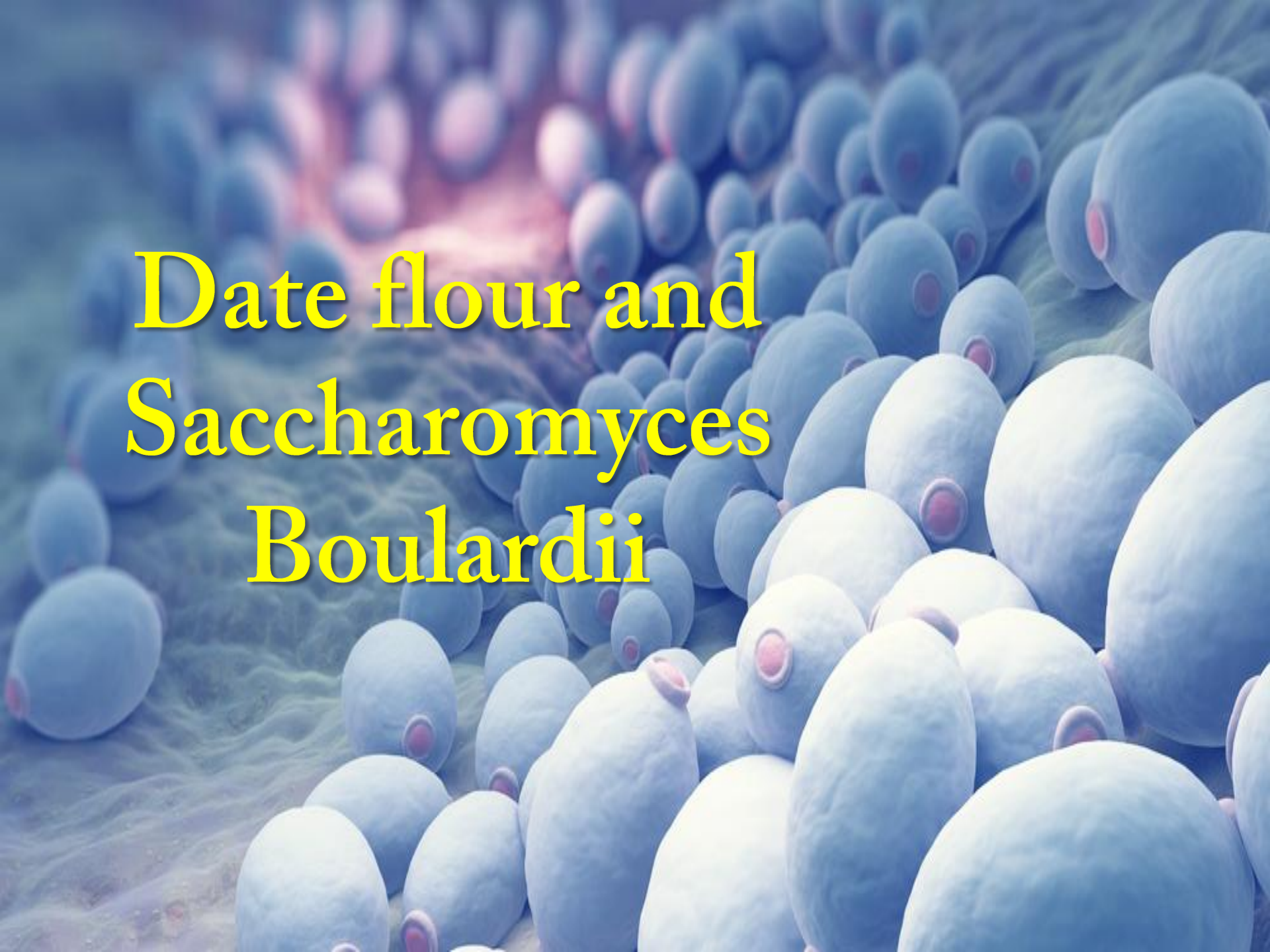
- *Damage and appearance of the mold of the grain after Soaking and drying.*
- *The hardness of biscuits produced.*
- *Its association with oil is less than wheat flour.*

solutions

- ✓ *After several attempts, we grind the grains without Soaking and drying them.*
- ✓ *We did not have time to try to reduce the hardness of the biscuits, but corn or rice flour may be a substitute for chickpea flour and improvements to the textures.*
- ✓ *We used 150 grams of butter instead of 200 grams, this may be one of the reasons for its increased hardness.*

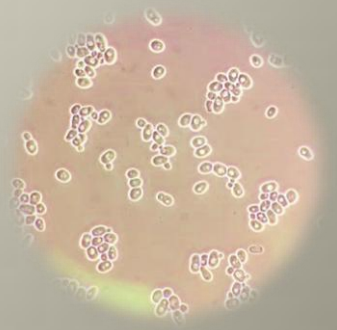
Gluten-free products are often unpalatable, and attempts to make their taste better with manufacturing processes are becoming more expensive. Therefore, the byproduct may be a helpful factor to reduce the cost to the patient, as date seeds are inexpensive food and have health benefits.

Date flour and Saccharomyces Boulardii



SACCHAROMYCES BOULARDII, Define it and how it works !

- Saccharomyces boulardii is a yeast, which is a type of fungus. Saccharomyces boulardii was previously identified as a unique species of yeast. But now it is believed to be a strain of Saccharomyces cerevisiae (baker's yeast). Saccharomyces boulardii is used as medicine.



- ***How does it work?***

- Saccharomyces boulardii is called a "probiotic," a friendly organism that helps to fight off disease-causing organisms in the gut such as bacteria and yeast.

Probiotic

- The yeast is used in as both a preventive and therapeutic agent for diarrhea and other GI disorders caused by the administration of antimicrobial agents.
- Temperature optimum is 37 °C.
- Inhibits the growth of a number of microbial pathogens.

Preparation of yeast with date seeds

Results

	0 time	5 days
Viable count	10^3 c.f.u/ml	2.9*10^9 c.f.u /ml

- *Therefore, Date seed can maintain and promote Saccharomyces boulardii growth.*
- ***Recommendations of Codex Alimentarius :***

which is any type of probiotic in functional food should not be less than 10^6 c.f.u /ml.

Some Details

- We cant use yeast in a product such as biscuits because of exposing the biscuits to 180°C temp. and the yeast dies at a temp. of 60 °C.
- Dates seeds can be used with yeast in the form of capsules to avoid bitter taste.
- We can not say for sure that it is not useful to add yeast to products that are exposed to heat, because there may be improvements added by yeast to the product, but we did not have time to discover it.