

# Chapter 1

## Introduction

### 1.1 Background

Cereal snack bars have been imprinted on present daily life. It safely guards its place as a meal replacement or snack due to its convenience, portability, and accessibility (Sharma et al., 2014). From the industrial point of view, cereal bars hold limitless potential for modification, delivering novelty to consumers through variants. Additional ingredients that contribute to flavor tend to be the variant specification for most cereal bars products, such as 'fruits', 'nuts', 'honey', etc. Due to this market potential of flavors, developing satisfactory texture is often forgotten. Not to mention, human innate carelessness towards texture unless it is astray from perception (Engelen & de Wijk, 2012). It is true that flavor is deemed as top key attributes in cereal bars with texture as the second (Bower & Whitten, 2000). But it does not mean that the texture is less important than the flavor. In fact, texture acts as the main factor for food rejection, along with acceptability, market value, and purchasability of food products (Lu & Cen, 2013; Chen & Rosenthal, 2015). Attention and innovation in textural properties are far lagging behind compared to the flavors; its importance is often overshadowed and understudied (Guinard & Mazzucchelli, 1996; Laureati et al., 2020). Therefore, this study intends to focus on the texture preferences especially of another trending innovation in food products: alternative sugar in cereal bars. Rise in the sugar substitution happens as a consequence of increasing health awareness (e.g. limit calorie and sugar intake) and expanding consumer reach (e.g. diabetes patient).

Texture preference is primarily affected by compatibility of food texture and mouth behavior due to the perceived textural sensation (Jeltema et al., 2015). Age, gender, and masticatory performance are suggested to affect mouth behavior (Ketel et al., 2019) through physiological differences. Though there are studies connecting texture perception and texture preference, direct correlation from age, gender, and masticatory performance remain unclear.

Aside from examining texture preference of sugar-substituted cereal bar bases, this study also intended to correlate age, gender, and masticatory performance towards texture preference of sugar-substituted CB bases. Expected contributions of this study include the application of the result as recommendations in developing sugar-substituted cereal snack bars with satisfactory/preferred texture key attributes and the inspiration it brings towards future research in assessing other types of product / higher complexity structure of product / larger scale experiment.

## **1.2 Objective**

The purpose of this study includes:

- To assess the association/correlation between age, gender, and masticatory performance towards preferences on particular texture attributes of sugar-substituted CB using sensory evaluation
- To write recommendations for CB developers based on the texture preferences and texture description of the CB base.

Therefore, the expected outcome of the study:

- Understanding the association/correlation of age, gender, and masticatory performance towards sugar-substituted CB base texture
- Provide recommendations for CB developers on the preferred texture of the sugar-substituted CB base

## **1.3 Scope of Project**

- Conduct a masticatory performance test of panelist using glucose extraction measurement
- Conduct sensory analyses (ODP and LHS hedonic test) to observe the relationship of preferred texture on CB base with age, gender, and masticatory performance, especially in adults

- This research goes hand in hand with other research; profound explanations on product development and instrumental analysis on physicochemical characteristics of the samples can be found in Krisnadi (2023) thesis manuscript.

#### **1.4 Hypothesis**

H0 : There is no association between age and texture preferences of cereal bar sample

Ha : There is association between age and texture preferences of cereal bar sample

H0 : There is no association between gender and texture preferences of cereal bar sample

Ha : There is association between gender and texture preferences of cereal bar sample

H0 : There is no correlation between masticatory performance and texture preferences of cereal bar sample

Ha : There is correlation between masticatory performance and texture preferences of cereal bar sample