

subsequent ratings. Many proposed solutions have been explored in the realm of palate cleansers. These have ranged anywhere from plain water at room temperature to hot water, carbonated water, water with added citric acid, pectin rinses that simulate natural saliva, milk, chewing wax and the list goes on. Additionally, it is common practice to use unsalted plain crackers to cleanse the palate between different samples. While different palate cleansers may have different benefits, Lee and Vickers (2010) demonstrated that, when evaluating astringent samples, the palate cleanser that allowed best discrimination between samples was plain room temperature water. This is important to keep in mind, as chocolate and cocoa are often astringent.

Additionally, it is important to consider the amount of time given for rinsing between samples. When possible, it can be helpful to enforce a time delay between samples to ensure that there is sufficient time taken between samples for adequate rinsing and resting to reduce carry-over effects. While it may not be possible to ensure that all participants are rinsing between each sample when running for example a large-scale consumer test (i.e. a Central Location Test), an enforced time delay may encourage adherence to rinsing instructions. Computerised data collection systems that allow the experimenter to enforce pauses and breaks before the participant can proceed to the next question may be especially useful in this situation.

21.3.4 Fatigue and sample size

Fatigue is a critical concern when planning sensory tests. Fatigue can be influenced by both the size of the individual samples and the number of samples per testing session. Additionally the complexity of the task can lead to fatigue. That is, if the task is simple, it may be possible to evaluate a greater number of samples. If a very large number of samples needs to be evaluated, it may be wise to break the samples into multiple testing sessions, or explore possibly using an incomplete block design (e.g. Li *et al.*, 2014). When considering the quantity of samples, it may be important to decide whether panelists should be instructed to expectorate. Expectoration can allow the panelist to continue evaluating without the physiological effects of feeling full, or at least slow the onset as it can be difficult to fully expectorate chocolate samples.

The size of the samples can also have a significant influence on the outcome of a test. When deciding on the physical size of samples, it is important to determine whether the panelists should have the ability to re-taste samples. If so, a larger piece may be required. If re-tasting is to be avoided and panelists are going to be instructed to consume the entire sample, smaller samples may be ideal. It is important to provide large enough samples that the participant can establish an opinion of the product, especially if the panelists are to consider texture and/or melting profile in their evaluation, which may require multiple bites.

21.3.5 Evaluation temperature and product form

Generally, when evaluating solid chocolate samples, the pieces should be allowed to equilibrate to room temperature ($\sim 22^{\circ}\text{C}$) before tasting. If the samples are kept in cold storage, it is common practice for samples to be brought to room temperature either overnight or for 24 h before a test. While it does not always require this amount of time, it is usually chosen for convenience. Additionally it is important to ensure that all samples are being presented and tasted at the same temperature, in case this could have potential effects on flavour, texture or even appearance.

If the decision has been made to evaluate melted/molten samples, again it is very important to ensure that all of the samples are presented and tasted at the same temperature. If a molten sample is to be evaluated for any textural attributes, such as particle size (i.e. smoothness or grittiness) the chocolate should be heated to a temperature where the majority of the fat crystals are melted to ensure consistent evaluation. Also, when heating chocolate, be mindful to keep careful control over temperature so as not to alter the flavour, especially by burning. For this reason, microwaving chocolate to melt it is usually cautioned against. Best practice is to bring samples to temperature in an incubator.

In some instances, such as for quality assurance purposes, it may be necessary to taste cocoa components other than finished products, which raises more questions around proper tasting procedures and protocols. For example, when tasting chocolate liquors, which are particularly fatiguing as they are naturally quite bitter and may be astringent, proper rinsing and resting time is necessary for accurate evaluation. When tasting components such as cocoa butter, it may be helpful to evaluate molten product, with the same considerations as above – ensure a consistent temperature and do not burn the ingredient. If tasting cocoa powders, it may be helpful in some instances to suspend a specific amount of the powder in an unflavoured carrier such as melted deodorised cocoa butter to make the evaluation process easier. However it is important to ensure that the carrier chosen is flavourless so as not to impact the evaluation.

21.3.6 Tasting instructions

The end goal of the test will dictate whether giving specific tasting instructions to the evaluators is appropriate or not. Tasting instructions would refer to specific directions on how to evaluate the samples. Here, we provide an example of what tasting instructions may look like, with the caveat that they need to be adjusted for the specific needs of the test:

“First, assess the appearance of the chocolate by evaluating the richness of colour, uniformity, smoothness and glossiness or shine of the surface. Next, the sample should be broken in half to judge the snap and the friability of the chocolate. Using one of the halves of the sample, evaluate the aroma of the chocolate before it enters the mouth. Place the sample on the tongue and close the mouth, allowing the sample to begin to melt and evaluate the retro-nasal aroma qualities of the sample. Once the sample has