The Ikale Collaboration: Randomized Trials of Beer Recognition

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“To be a country you need to have a national airline and a national beer”.

—Frank Zappa

Introduction

Tonga no longer has a national airline with the recent demise of Royal Tongan Airlines, but it has two national beers: Ikale and Royal. Both are lagers, but they are widely believed to be of different taste and quality. Bottled Ikale beer is considered to be inferior in quality with a great variation from batch to batch, and even from bottle to bottle within the same batch. Draft Ikale is believed to be of higher quality, whereas Royal is the premium beer. Both beers are made by the same company. Recently we taught an epidemiology course in Tonga, and during a late night planning meeting we decided to conduct a series of randomized “taste test” trials to test these common perceptions.

Methods

Each trial involved single-blind randomized administration of two different Tongan beers. Each administration involved a single “sip”, so the total quantity of beer drunk was less than one standard drink. Data was recorded on a beer “coaster”. Approval for the study was given by the Secretary of the Tongan Health Research Ethics Committee who was present throughout the procedures.

Trial 1 involved a comparison of bottled Ikale beer with bottled Royal beer. The subject was a male university Professor from New Zealand. He was blindfolded, and the administration of the two products was then randomized by tossing a coin. At the first administration the subject was observed to be feeling the label of the bottle and it was considered that this might “unblind” the study. The first administration was therefore excluded and in subsequent administrations the research assistant held the bottle to the subject’s mouth. In the subsequent seven administrations, the participant made a correct identification on six occasions; we therefore decided to continue according to the “intention to drink” principle.

Trial 2 involved a comparison of bottled Ikale with draft Ikale. The participant was a male university Professor from the United Kingdom. The method of randomization and administration of the two products was then randomized by tossing a coin. At the first administration the subject was observed to be feeling the label of the bottle and it was considered that this might “unblind” the study. The first administration was therefore excluded and in subsequent administrations the research assistant held the bottle to the subject’s mouth. In the subsequent seven administrations, the participant made a correct identification on six occasions; we therefore decided to continue according to the “intention to drink” principle.

Trial 3 was intended to compare draft Ikale with bottled Royal beer. The participant was a male university Professor from the United Kingdom. The method of randomization and administration was the same as for trial 1, except that bottled Ikale was poured into a glass and both beers were then administered from glasses. Figure 1 shows the administration of the intervention to participant 2.

Trials 3 was intended to compare draft Ikale draft with bottled Royal beer. However, the trial was abandoned because nobody wanted to drink the beer any more.
Results

Participant 1 appeared to show a deterioration over time with 6 out of the first 7 administrations correctly identified, but only 3 out of the next 13, yielding 9 correct out of 20 tests. Participant 2 appeared to show a learning effect with only 7 of the first 16 identified correctly, compared with all of the last 4, yielding 11 correct out of 20 tests. Although these trials involved different beers, our global null hypothesis was that all lagers taste the same. Under this hypothesis it was therefore reasonable to combine the two trials, yielding an overall prediction rate of 20 out of 40 (0.50, 95% CI 0.35-0.65), which is consistent with the null hypothesis that participants would have no idea which beer they were drinking and therefore would make a correct prediction by chance 50% of the time (p = 1.00).

Discussion

There are a number of potential biases that should be considered with regards to these data. Potential effect modifiers include the time of the evening and the amount drunk prior to the trial, but unfortunately we neglected to record these. The amount administered (less than one standard drink) was much smaller than the participants had already drunk, so we were assessing the ability of participants to taste the difference between small additional quantities. Both participants were of European origin and we were therefore unable to study gene-environment interactions involving the ALDH2 genotype. Perhaps the major concern is that the number of tests was small, but we were unfortunately unable to continue with further trials. However, given that the global null hypothesis was that “all lagers taste the same”, we have no reason to believe that our findings are not generalizable to other lagers. We would therefore encourage colleagues in other countries to join the Ikale Collaboration and conduct similar trials, including more detailed information on potential effect modifiers, and to submit the findings to us for a global meta-analysis.

Conflict of interest: None declared.