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**Travel to New Zealand in 2019 to attend the  
13th Australian and New Zealand sensory  
and Consumer Science Symposium and**



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**REPORT TO WINE AUSTRALIA FOR TRAVEL**

**Project Number: WAT 1806**

**Principal Investigator Sandra Olarte**

**Research Organisation: The University of Queensland, QAAFI –  
CNAFS**

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## **1 Executive summary**

Sandra Olarte travelled to Dunedin New Zealand to attend and deliver an oral presentation at the 13<sup>th</sup> Australian and New Zealand (ANZ) Sensory and Consumer Science Symposium entitled “Understanding the relationships between consumer astringency ratings and oral physiology measures”. The symposium was held at the University of Otago Campus and was attended by students, scientist and members of the food industry conducting sensory and consumer science research.

After the 13<sup>th</sup> ANZ Sensory and Consumer Science Symposium Sandra Olarte travelled to Lincoln to visit Lincoln University and to deliver a seminar and interact with scientist from Lincoln University. She delivered an oral presentation entitled “Understanding the relationships between consumer astringency ratings and oral physiology measures”. During her visit at Lincoln she had the opportunity to interact with Scientist of Lincoln University and Plant & Food Research Institute and discuss some of the outcomes of her research of Astringency and oral physiology measures.

A highlight from the 13<sup>th</sup> ANZ Sensory and Consumer Science Symposium were the seminars of Dr Linda Flammer former sensory & consumer research manager at PepsiCo who identified the areas that are being neglected in sensory and consumer science studies.

## 2 Background

The Australian and New Zealand Sensory and Consumer Science Symposium is a forum designed to provide new inspiration and knowledge for sensory and consumer professionals. The main objectives of this small format symposium is to gather sensory and consumer science researchers and professionals mainly based in Australia and New Zealand but not excluding other countries to: interact with international science leaders in this field, learn about the latest developments in research methods and network and exchange ideas. This symposium is also attended by wine industry sensory scientists from Australia and other countries that attend to share their research outcomes and learn from the new methodologies and applications in the food and beverage industry.

As part of this trip it was planned to visit several groups of food science and wine science academics to exchange ideas and work towards build up collaborations. Visits and seminars were delivered at the University of Otago, Lincoln University and Food & Plant research in Lincoln. These institutions are recognized worldwide by their excellence in food and/or wine research.

### 3 Project objectives and performance targets

#### 3.1 Objectives:

The objectives of this travel were to

- Present results of current astringency and oral physiology via oral presentation at the 13<sup>th</sup> ANZ Sensory and Consumer Science Symposium in Dunedin, 3<sup>rd</sup> -5<sup>th</sup>, February 2019 and at Lincoln University.
- To discuss and obtain feedback and networks/collaborations from the peers in the sensory and consumer science and wine & viticulture areas at the 13<sup>th</sup> ANZ Sensory and Consumer Science Symposium and at Lincoln University.

#### 3.2 Project outputs and performance targets:

Output	Performance Targets	Date
A. Attendance to the 13th Australian and New Zealand Sensory and consumer Science Symposium (Dunedin, 3-5 Feb 2019) and delivery of an oral presentation entitled "Understanding consumers astringency perception from the oral physiology perspective"	Abstract submitted and accepted for oral presentation, symposium attended and oral presentation delivered.	Completed 5/2/2019
B. networking/collaboration building	Visit to Professor Oey and Dr Peng at The University of Otago and Dr Schelezki and Dr Parr at Lincoln University with the delivery of a seminar at both Universities	Completed 8/2/2019
C. Submission of a final travel report to Wine Australia	Wine Australia travel report completed and submitted	Completed 29/07/2019
D. Seminar at Viticulture and sensory groups of the University of Adelaide presenting the highlights and new knowledge from the 13th Australian and New Zealand Sensory and Consumer Science Symposium and the visits to The University of Otago and Lincoln University	Seminar presented	Completed 05/07/2019
E. Publish a peer review article that includes the results project "Understanding consumer's astringency perception from the oral physiology perspective" presented at the 13th Australian and New Zealand Sensory and Consumer Science Symposium.	Article submitted, accepted and published.	Delayed

#### 4 13<sup>th</sup> ANZ Sensory and Consumer Science Symposium, Dunedin, New Zealand

In February 2019, Sandra Olarte (Figure 1) travelled to New Zealand to attend the 13<sup>th</sup> ANZ Sensory and Consumer Science Symposium. The congress took place from the afternoon of 3<sup>th</sup> of February until the end of the morning of the 5<sup>th</sup> of February 2019 at The University of Otago Main common room, in Dunedin.

The symposium was attended by 36 participants (Figure 1) that included PhD students, researchers and professionals in sensory and consumer science from academia and the food & beverage industry. The symposium had workshops from the two key note speakers Dr Linda Flammer and Dr John Prescott who covered three main topics:

- Using sensory and consumer research for business development
- Impacts of globalization on sensory research
- Consumer research in the changing world

Other 19 oral presentations were delivered by symposium attendees who presented outcomes either results of the research projects involving sensory and consumer science or studies evaluating sensory and consumer science methodologies.



Figure 1 Attendees of 13<sup>th</sup> ANZ Sensory and Consumer Science Symposium at University of Otago in Dunedin

#### 4.1 Summary of selected presentations

Sandra Olarte delivered an oral presentation (Figure 2) entitled; **“Understanding the relationships between consumer astringency ratings and oral physiology measures”**. This presentation showed preliminary results of a consumer study with 129 participants who rated the intensity of two astringent solutions; Tannic acid and Alum and its relationship with oral physiology measures. Individuals who rated both astringent stimulants high had also higher intensity ratings for PROP. Great interest was shown from other researchers in regards to similar outcomes in terms of the difficulty to relate tactile acuity methods to measurements of texture perception as it is astringency.



Figure 2 Sandra Olarte during the oral presentation at the 13th ANZ Sensory and Consumer Science Symposium in the second day of the symposium held at the University of Otago in Dunedin.

Some of the presentations at the 13th ANZ Sensory and Consumer Science symposium that caught the attention of Sandra Olarte included;

Key note speaker Dr Linda Flammer (Figure 3) presented three lectures in a presentation entitled **“Consumer Research in the Changing World. Sensory and Consumer Science: It’s complicated”**. The lectures were focused on the components that affect consumer “Food Choice”. The model that she presented has four factors that interrelating will help to understand and determine consumer food choices. The components in the Food Choice model are Sensory factors, Contextual factors, Physiological Factors and Individual factors. Her views are that in some of the components a lot of importance has been given to some sub-factors to the point of neglecting others. An example is in the sensory factor where consumer and sensory research have overemphasized efforts in the evaluation of flavour and in some case neglecting sub-factors such as texture & mouthfeel and sound.

In the case of the “Individual factors” she believes that a lot of attention has been given to PROP to the point of complicating the understanding of consumer choices, and other individual factors such as BMI. Correlations between BMI and detection thresholds of Fatty acid C18. In the individual factor she also paid emphasis to the weight that non-discriminators can have in consumer studies, she believes that in products development studies they should be excluded from the data analysis.

In the space of the ‘Contextual factors” she believes that we have mostly neglected it this area. Some of the sub-factors that have been neglected are effect of setting on food choices, context and brand. In some case it necessary to at least simulate the conditions of the consumption setting to be able to determine difference in products. She presented an example with coffee brands of an acceptability evaluation done in the sensory booths and a virtual café setting. Differences were perceived when the taste test was done in the virtual setting but not in the booths. +



Figure 3 Key note speaker Dr Linda Flammer during her second lecture

In the “physiological factors” she presented post-ingestive consequences, emotional experience and wanting as neglected sub-factors influencing consumer’s choice. At the same time she believes that great attention has been given to “emotions” in the last decade but it might have been misused. Relying in self-reporting of emotions from an available list could lead to false positives. Evaluation of facial expressions showed to be more reliable in a study with soft drinks when identifying the least preferred choice. Wanting was also able to be measured from the facial expressions prior consumption and liking from the facial expression during consumption.

Dr Joanne Hort from Massey University (Figure 4) presented a talk entitled “**Does individual variation in oral sensitivity and mouth behaviour provides insights into texture preferences?: A pilot study.**

In her study Prof Hort evaluated consumer preferences of food products with different texture and its relationship with oral physiology measures. She asked 50 consumers to self-report via an online questionnaire their preference for foods pairs texturally different; e.g. crunchy peanut butter vs smooth peanut butter. Also did an in-vivo preference taste test of five foods of different textures. She collected oral physiology measures of all the consumers such as: PROP taste status, tactile acuity, fungiform papillae density. The consumers were classified as crunchers, chewers, smoothers or suckers using the mouth behaviour tool from Jeltema et al. 2015. In her study Prof Hort did not find relationships between the mouth behaviour types and the oral physiology measures. Tactile acuity measure using the letter recognition method of Essick et al 2003 did not have a relationship with the texture preferences, mouth behaviour groups not the oral physiology measures.



Figure 4 Prof Joanne Hort Fonterra Riddet Chair in Sensory and Consumer Science

The unexpected results made Prof Hort questioned the validity of some of the methods used to evaluate tactile acuity and PROP taste status. She suggested that the best method to evaluate PROP taste status is dipping cotton buds in saturated PROP solution. Also suggested the grating pieces (Hofmann et al., 2018) as an alternative method to evaluate tactile acuity.

Dr John Prescott (Figure 5) was one of the key note speakers and presented a lecture entitled **Does personality determine food perceptions and preference?**, Dr Prescott is one of the co-investigators

of the Italian taste project which involves several research organizations of and three year project that recruited 3000 Italian consumers. In his lecture Dr Prescott presented the case of Chilli as it has been found that pungent foods like chilli might have health benefits. In this study was confirmed a positive relationship of PROP sensitivity and capsaicin burning sensation. Personality traits helped to explained choice and liking of pungency in foods. For example low neophobic and low sensitivity to disgust participants were more likely to choose and like pungent foods containing capsaicin. A potential avenue to improve liking of capsaicin and other foods in neophobic consumers is by exposing them to the unfamiliar agent. Exposure might potentially reduce neophobia. Oral Physiology traits were not related to neophobia.



Figure 5 Dr John Prescott during his presentation of the Italian Research Project

A discussion panel session with question from the participants to the key note speakers and Prof Joanne Hort was introduced on 13<sup>th</sup> Version of the ANZ sensory and Consumer Science Symposium (Figure 6). In this discussion questions from the attendees were raised to the panel. Some related to the use of quicker methodologies such as RATA (rate all that apply) to profile products. They agreed on supported the use of this methodologies but also emphasized that the number of attributes should not be high. Other questions to the panel:

**Outsource panels?** Ok if it for marketing purposes

**Consumers doing sensory profiling?** Definitely not!! Training is required.

**Emotions:** We are using standard questionnaires that redundant “emotions” that are overcomplicating the task and not adding extra information e.g. pleasant and unpleasant

**Discriminating vs rating scales with consumers:** rank probably better as will increase the power value by forcing them to make a choice with a value in terms of preference.



Figure 6 Prof Joanne Hort, Dr Linda Flammer and Dr John Prescott at the panel discussion session.

## 5 Academic visits

### 5.1 Visit to Otago University

Upon completion of the 13<sup>th</sup> ANZ Sensory and Consumer Science Symposium Sandra Olarte had the opportunity to have a brief visit the sensory laboratories of Dr Mei Peng at the University of Otago in Dunedin. Dr Peng is a sensory Lecturer at the University of Otago and interested in sensory, cognitive and behavioural factors driving people's food choices and intake and how they relate to eating behaviour and obesity.

## 5.2 Visit to Lincoln University, Lincoln, Canterbury.

On the 8<sup>th</sup> of February Sandra Olarte presented a seminar at the seminar series of the oenology and viticulture centre of the faculty of Agriculture and Life Sciences (Figure 7). The title of the delivered seminar was **“Understanding the relationships between consumer astringency ratings and oral physiology measures”**. Following the seminar Sandra had the opportunity to exchange ideas with researchers of the Oenology and viticulture Centre Bin Tian, Olaf Schelezki and other lecturers and researchers of the faculty of Agriculture and Life Sciences. The attendees to the seminar were very interested in the topic of oral physiology measures as a tool to understand wine astringency which seemed an uncommon topic in wine research.

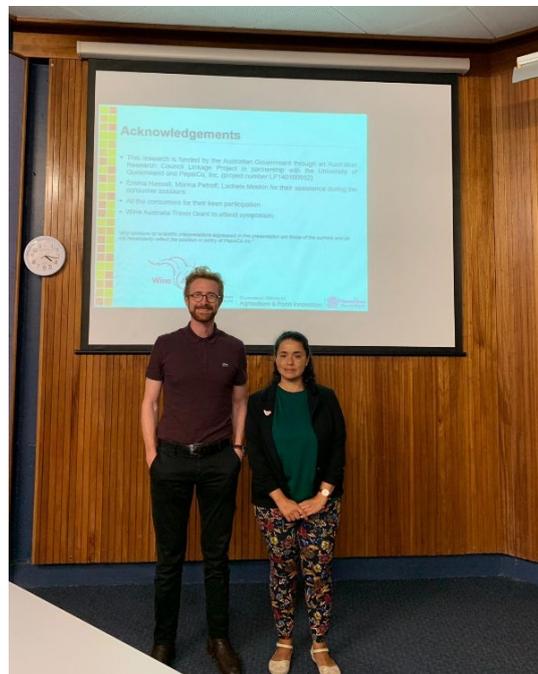


Figure 7 Dr Olaf Schelezki viticulture lecturer at Lincoln University and Sandra Olarte following the delivery of seminar at Lincoln University.

## 5.3 Visit to Food and Plant Research Institute, Lincoln, Canterbury

On Thursday 7<sup>th</sup> of February Sandra Olarte had the opportunity to visit Dr Marco Morgenstern and his research team at Food & Plant Research. In this visit She had discussion about human oral physiology variables and its relationship with astringency perception. One particular discussion was about alpha

amylase content in human saliva. The group of Marco Morgenstern provided recommendations on the measurement and interpretation of this variable.

Another discussion with his team was about the quantification of chewing behaviour among individual and its relationships with textural preferences in foods. This visit was important as the group of Marco Morgenstern is leading the researching in the methodology to quantify chewing behaviour.

## **6 Conclusion**

Attendance to the 13<sup>th</sup> ANZ Sensory and Consumer Science Symposium provided me the opportunity to present my research relating oral physiology measures and astringency perception from consumers. It also provided me the perfect chance to meet and maintain the connections with other sensory scientist from the food and beverage industry. It also gave the opportunity to present the results of my research in astringency to the members of the wine industry in the academic visits and at seminar the University of Adelaide.

## **7 Acknowledgments**

The author would like to acknowledge the support of Wine Australia who co-funded the travel to attend and present at the 13<sup>th</sup> ANZ Sensory and Consumer Science Symposium and academic visits to Lincoln University. Special thanks to the hosts during the study visits in Dunedin and Lincoln.