

# Use of Temporal Dominance of Sensations to study inhibition and masking effects during the combined consumption of wine and cheese and their influence on dynamic liking



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## WHY CARRY OUT THIS RESEARCH?

Wine and cheese have long been subject of many sensory studies and are highly recommended to be consumed together. In the wine and cheese sector there are well-known “*wine-cheese couples*” and there are others that are said that should “never” be consumed together. Some are based on *terroir* or simple tradition; but there is still no proof on how one influences the sensory perception of the other and if they are indeed “good” or “bad” combinations.

The present project aims to better understand wine/cheese interactions trying to find out how the perception of one (basic tastes and mouthfeel, such as astringency) can (or can not) be affected by the other. This would be achieved by developing an innovative technique based on the Temporal Dominance of Sensations (TDS) paradigm.

## MAIN OBJECTIVES

1. Finding different wine-cheese combinations to study inhibition and masking effects.
2. Developing a new evaluation technique: multi-bite/multi-sip TDS done by a trained panel and by consumers to identify the different dominant attributes during consumption.
3. Developing a multi-bite multi-sip protocol for evaluating consumer preference of the studied combinations.
4. Correlating dominant attributes and preference.

## MATERIALS

### Samples

#### The cheeses

- ✓ Époisses (provided by the *Syndicat de Défense de l'Époisses*)
- ✓ Roquefort (provided by *Société*)
- ✓ Crottin de Chavignol (provided by the *Syndicat du Crottin de Chavignol*)
- ✓ Comté (provided by the *Centre Technique des Fromages Comtois*).



#### The wines

Wines with very different sensory profiles and chemical composition (particularly in sugars and tannins) were chosen: white sweet wine, white dry wine and two red wines. Samples were provided by the BIVB (Bourgogne), the *Syndicat du Crottin de Chavignol* and the private sector.

## METHODS

### Temporal Dominance of Sensations (TDS)

TDS is a sensory dynamic descriptive technique which consists in letting the panelist (or consumer) indicate all along the time of consumption of a product (e.g.: a sip, a bite) the descriptors that dominate perception at each moment. From a list of attributes they have to choose the one which catches most their attention at every instant (Fig. 1). It was created by the hosting laboratory that has been improving it on several products.

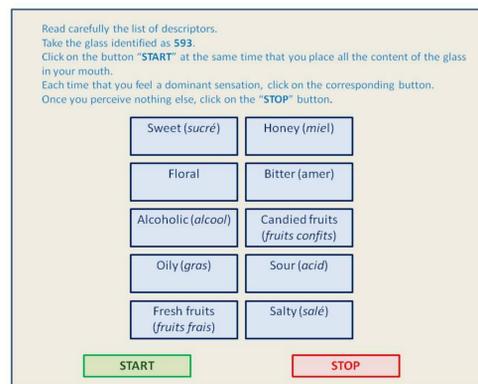


Fig. 1 - An example of a screen of a TDS test used in one of the experiences.

In addition, the hosting laboratory has just proposed the possibility of extending the use of TDS to a multi-bite TDS. This allows finding out how dominance changes during the complete consumption process.

Having this in mind, a multi-sip/multi-bite TDS where product consumption will be alternated (e.g. wine-cheese-wine) will be developed. This would allow evaluating the impact of one product on the perception of the other close to real consumption conditions.

## THE FIRST RESULTS

### 1. Can we get good TDS results from consumers?

A first experiment was carried out on wine with good results. This will be presented at the **37<sup>th</sup> World Congress of Vine and Wine**, organized by the OIV (Mendoza, Argentina, November 2014). The work is entitled: “*Evaluation de la Dominance Temporelle des Sensations de vins rouges de Bourgogne et du Beaujolais par un panel d'experts et de consommateurs*” by Brachet, Galmarini, Chatelet, Loiseau, Cordelle, Lempereur and Schlich. It was found that consumers were highly repeatable even though experts were more consensual, particularly because consumers received very little training on the samples descriptors.

### 2. Can consumers perform TDS on two different products in a successive manner?

A pre-test was done with 149 consumers attending the *Innovation Connective Show* (Toulouse, 18-20 Sept., 2014). Consumers did the TDS profile of two cheeses and two wines. Afterwards they also stated their level of acceptance for each product. Different cheese/wine orders were tested having a balanced design.



Fig.2 is an example of the obtained results. They are the TDS curves of the same wine (white sweet wine) done after tasting the *roquefort* cheese (A) and after the *Crottin de Chavignol* (B). While the roquefort highlights the taste of candied fruits and the alcoholic finish while the other cheese impacts the descriptor honey, showing the impact of cheese on the wine profile.

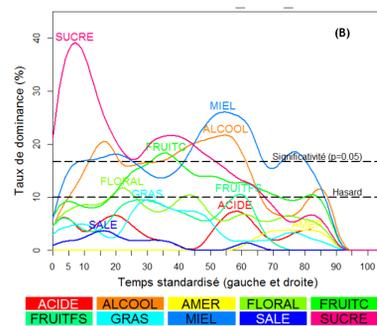
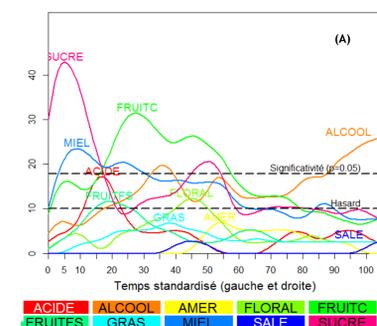


Fig. 2. Average TDS curves of white sweet wine after tasting roquefort (A) and Crottin de Chavignol (B).

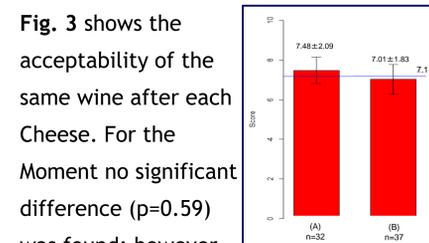


Fig. 3. Average acceptance in a scale from 1-10 for the white sweet wine after tasting roquefort (A) and Crottin de Chavignol (B).

## NEXT STEPS

With eight months ahead, there is still a lot to do including:

- ✓ Analyzing the multi-bite TDS results of four cheeses recently finished by two sensory panels in Dijon.
- ✓ Analyzing the multi-sip TDS results of four wines recently finished by two sensory panels in Dijon.
- ✓ Analyzing the different multi-sip TDS of the four wines when consumed with a cheese: wine-cheese-wine-cheese-wine.
- ✓ Validating results by comparing the two panels.
- ✓ A new experimental campaign in order to better understand product preference.
- ✓ Communicating results in Sensory related Congresses and specialized indexed journals.