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How about some cheese with that wine?

Use of Multi-Intake Temporal Dominance of Sensations to evaluate the influence of cheese on wine perception and appreciation.

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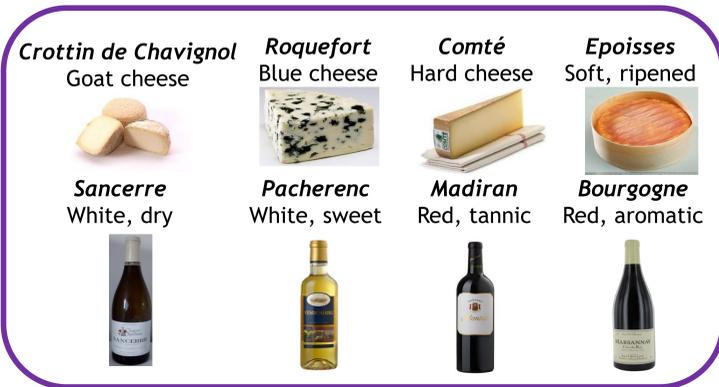
Some “wine-cheese couples” have a good reputation while others are discouraged of being consumed together, based on *terroir* or tradition. However, there is no proof on how one cheese could influence the sensory perception of a wine.

AIM:

Evaluate the impact of cheese on temporal perception and appreciation of wine.

MATERIALS & METHODS

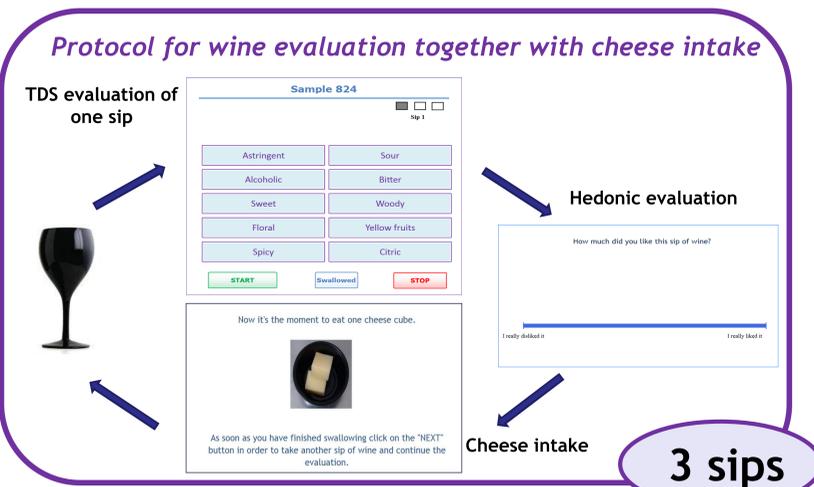
Wines and Cheeses: chosen on usual gastronomic recommendations



The panel: consisted of 31 frequent wine and cheese consumers somewhat familiar with TDS.

Multi-intake Temporal Dominance of Sensations (TDS) alternated with an hedonic test.

Wines were evaluated by multi-intake TDS according to the protocol described in the figure below. For each sip of wine the TDS profile was done; and then an hedonic score was given. Before taking a second sip of wine, consumers eat a piece of cheese. Right after finishing eating they evaluated a second sip. The cycle was repeated 3 times. The 16 wine-cheese combinations were evaluated over 4 sessions. As a reference, the same task (TDS + hedonic test) was done for each wine without cheese intake.



Details on data analysis

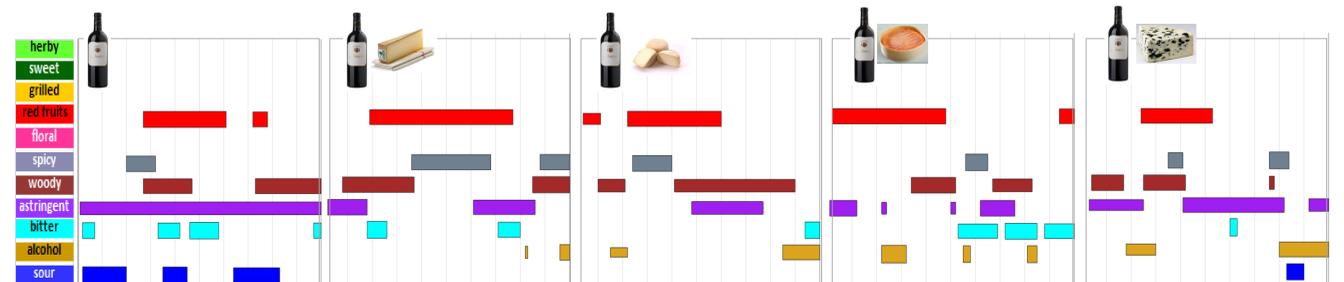
- 1- Representation of Canonical Variate analysis (CVA) of durations.
- 2- ANOVA/MANOVA ; Duration = Product + Subject
- 3- Done by wine, comparing the effect of cheese intake, using sip as repeated measure. ProcMixed, SAS®

RESULTS - Focus on Madiran wine

The effect of cheese on wine perception was evaluated by comparing the TDS profile of the 3rd sip of wine with no cheese, to those obtained after cheese intake.

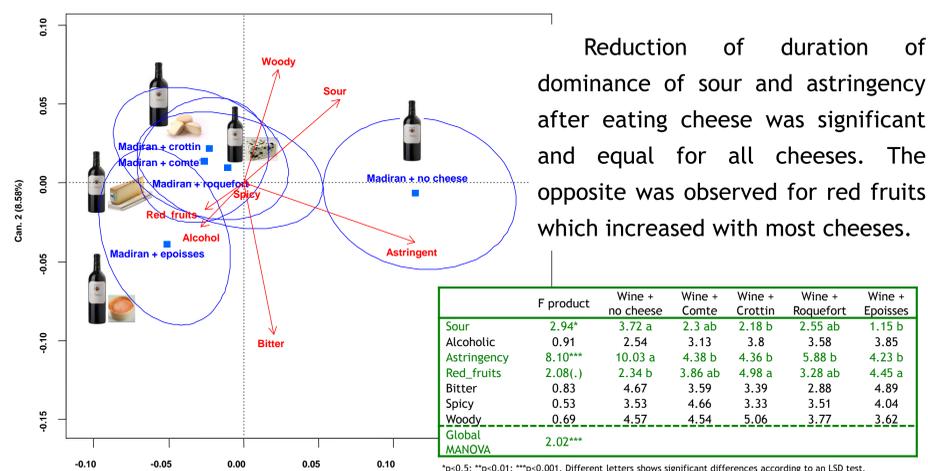
Differences on sequentiality of significant dominant sensations.

Bandplots by attribute for wine with no cheese and after Comté, Crottin de Chavignol, Epoisses and Roquefort.



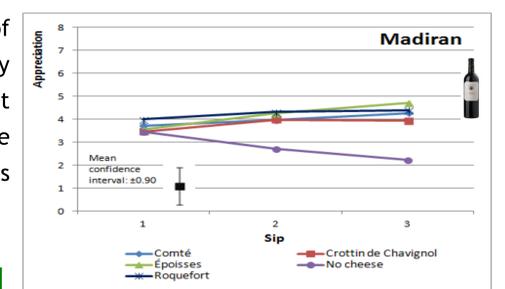
The same descriptors appear as dominant in most cases except for: **alcoholic** (dominant only after cheese consumption) and **sour** (dominant when no cheese was consumed and after *Roquefort*). There were also some changes on sequentiality E.g.: woody was dominant in the middle and the end of the sip for *Madiran* but at the beginning for *Madiran+roquefort*.

Differences on duration of dominance ^{1,2}



Reduction of duration of dominance of sour and astringency after eating cheese was significant and equal for all cheeses. The opposite was observed for red fruits which increased with most cheeses.

Differences on appreciation ³



When drunk alone, wine appreciation decreased from Sip 1 to 3. An opposite behavior was observed after cheese intake, regardless of the type of cheese.

Summary for the other wine-cheese combinations

Significant changes in duration of dominance

	Fprod	Wine+ no cheese	Wine + Comté	Wine + Crottin	Wine + Roquefort	Wine + Epoisses
PACHERENC						
Alcohol	2.91*	1.48 b	3.37 a	2.54 ab	1.43 b	1.47 b
Bitter	2.26(.)	0.67 b	0.65 b	1.06 b	3.21 a	1.33 ab
Citric	2.63*	2.36 ab	1.49 b	1.63 b	0.98 b	3.07 a
Sour	1.74(.)	1.64 ab	0.9 b	1.81 ab	1.03 b	2.93 a
SANCERRE						
Astringent	3.18*	3.25 a	0.75 c	2.77 ab	2.13 abc	1.43 bc
Citric	2.16(.)	7.43 a	6.47 ab	6.50 ab	4.34 b	4.35 b
BOURGOGNE						
Astringent	4.62**	5.98 a	4.22 b	3.64 b	2.63 b	2.83 b
Red fruits	2.51*	2.61 b	4.56 ab	6.16 a	2.54 b	4.38 ab

(.)p<0.1; *p<0.5; **p<0.01; ***p<0.001. Different letters shows significant differences according to an LSD test.

- **Pacherenc**: high score ratings did not change, in spite of the impact of cheese on the duration of dominance of 4 descriptors.
- **Sancerre**: all cheeses reduced the duration of perceived astringency, but only *Comté* increased the liking scores.
- **Bourgogne**: all cheeses reduced the dominance of astringency and some had an impact on red fruits aroma.

CONCLUSION

- Cheese had an impact (product dependent) on the temporal perception and appreciation of wine, observed thanks to multi-intake TDS.
- As a general rule, cheese reduced the duration of dominance of astringency in wine.
- Wine appreciation was improved by the presence of cheese; in other words, some wines should rather be drunk with cheese than alone. Preference was not reduced by any of the cheeses.

