



Sensory effects of consuming cheese prior to evaluating red wine flavor

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Wine and cheese anyone? The goal of this study was to assess through descriptive analysis the way in which the flavor perception of different red wines is influenced by pairing them with different types of cheese.

- Cheese and wine have a tradition of being a perfect match, even if recommendations in the popular literature are rarely justified and sometimes disagree. As for the scientific literature, references to wine/food pairings are infrequent.
- The authors felt that to study cheese and wine pairing, a previous understanding of the way in which cheese affects the sensory attributes of wine was required. So they evaluated the sensory effects of a variety of cheeses on red wine flavor and compared the results to the wine flavor when no cheese was consumed.
- They chose 8 wines -2 from each of 4 varieties- in an attempt to select a low and a high price point within each variety: Pinot noir, Pinot noir\$, Merlot, Merlot\$, Cabernet Sauvignon, Cabernet Sauvignon\$, Syrah, and Syrah\$. For the cheeses, they chose 8 that covered a wide range of textures: 2 hard cheeses (Gruyere and Emmental), 2 cheddars (Vermont and New York), 2 soft cheeses (Mozarella and California Teleme), and 2 blue cheeses (Stilton and Gorgonzola).
- One of the techniques used by researchers to evaluate sensory characteristics is called Descriptive Analysis. In Descriptive Analysis, a panel of tasters -called an analytical panel- is trained to recognize smell and taste sensations -or attributes- and later given the task to measure the intensity of those sensations in a wine. This is not unlike how a highly calibrated and reproducible pH-meter would measure a pH.
- The analytical panel in this case consisted of 11 students of UC Davis. Training consisted of 10 1-hr sessions, which normally followed the routine: 1) the panel generated descriptors for the specific wines, 2) reference standards for those descriptors were presented -first in water, then in wine-, 3) the judges refined the descriptors (eliminate, add, lump, break apart, etc), and 4) the panel decided which descriptors to retain.
- The actual evaluation -which followed a mock evaluation to confirm that panel performance was satisfactory- consisted of 2 stages. In stage 1, the panel performed descriptive analysis of the 8 wines by themselves. In stage 2, the panel evaluated 64 wine-cheese combinations, in triplicate, during 24 sessions (8 wine-cheese “combos” per session). Cheese was presented as a 5 gram cube, which was placed entirely in the mouth and chewed before the judge moved on to evaluate the wine, which was finally expectorated.

- **Wines without cheese.** Even though the individual wines selected for each variety pair were not necessarily representative of the population of “low price” and “high price” wines for that particular variety, the authors observed one interesting trend. The Cabernet\$ had more astringency and more oak flavor than the Cabernet of lower price point; and similarly, the Merlot\$ had more astringency and more oak flavor than the lower-priced Merlot.

- **Effect of cheese on wines.** Each cheese had an effect on wine, and this effect was consistent over the eight different wines (no “wine x cheese interactions”). In general, most cheeses decreased the intensity of the following wine attributes: *berry* (but not statistically significantly), *dried fruit*, *oak*, *mushroom*, *vegetal*, and *bell pepper* aromas, *berry by mouth*, *oak by mouth*, *sourness*, and *astringency*. *Butter* aroma was the only wine attribute that was increased by eating cheese before evaluating the wine. Remaining wine attributes that the panel evaluated but were not affected by cheese included: mint, vanilla, leather, and chocolate aromas, chocolate by mouth, and ethanol. Some cheeses showed a bit more effect than others, depending on the attribute in question. As we can see, cheese decreased the perception of most of the attributes, regardless of whether they were considered desirable (like fruit) or not (like bell pepper).

- In their discussion, the authors cover a number of potential mechanisms that might explain the results observed: sourness being suppressed by salts in the cheese, individual sensitivity effects on bitterness, the role of cheese protein-binding in suppressing every sensation, role of cheese fat-coating in suppressing astringency, butter in cheese enhancing a buttery sensation, and strong cheeses causing larger suppressions than milder ones. Interestingly, previous researchers have found that *enhancement* is usually the prevailing phenomenon when tasting mixtures in which the tastes/odors are similar; whereas *suppression* is more frequent when the foods are dissimilar. The current authors’ findings are in agreement with this.

So if cheese does not enhance wine, could wine be enhancing cheese? But first, what do we mean by enhancement? Foods are so complex that suppressing a given sensory attribute –for instance, astringency, or bell pepper- might actually result in a hedonic “enhancement”. In this sense, could wine and cheese be enhancing each other? Could the fat in the cheese “lubricate” the tannins in the wine, and the tannins in the wine “cleanse” the palate from the sticky cheese? The answers will have to wait, as this was not the scope of this paper. Here, the authors performed rigorous descriptive analysis and were able to show that, contrary to what we might have thought, **cheese decreases the intensity of most attributes of a red wine**, and not the other way around. The authors are not implying that we should not eat cheese before wine. On the contrary, as they clearly state at the end of the paper, the effects they find for a variety of wines and cheeses are so similar, that we should be able to enjoy almost any cheese with almost any wine.

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