An holistic dairy-alternative drinks sensory & consumer understanding: identification of the perceived off-notes in oat, soy and almond drinks, and how they influence consumers liking using the Scan Review method

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OBJECTIVE : Understand Plant-based dairy alternatives' drinks sensory properties and which ones could penalize the products liking and thus would need to be masked, from the consumers' point of view.

Hypothesis 1 : what experts define as an off-note may be different from what consumers do
Hypothesis 2 : An off-note may be accepted in one product context and not in another.

PHASE 1 : Sensory characteristics' understanding

QDA using **MANE plant-protein wheel (Fig 1)** references on 35 unflavoured dairy alternative market products covering :
3 different plant-bases : Soy / Almond / Oat
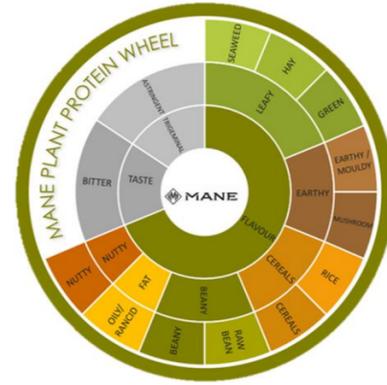
5 European countries :   DE   FR   UK   DK   FI

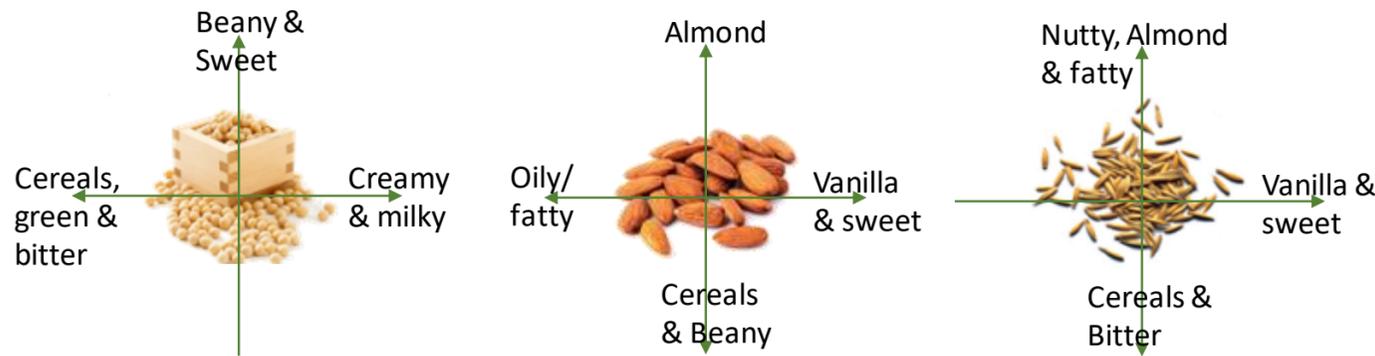

Figure 1: MANE plant-protein wheel

Figure 2: Sensory axes of differentiation for soy, almond and oat drinks

Overall, plant-based market products are discriminated through the following sensory characteristics :

Cereals, beany, bitter and oily/fatty tastes = expected negative sensory characteristics **Sweet, creamy/milky or vanilla and almond tastes** = expected positive sensory characteristics

=> To identify the real penalizing sensory characteristics, 3 discriminant market products of each plant-base were tasted by consumers.

PHASE 2 : Sensory off-notes' identification using the Scan-Review approach

300 French & German consumers evaluated **9 market products**
Quantitative ScanReview method : focus on characteristics really perceived by consumers, using JAR-scales applied to sensory characteristics pre-selected by each consumer (CATA)
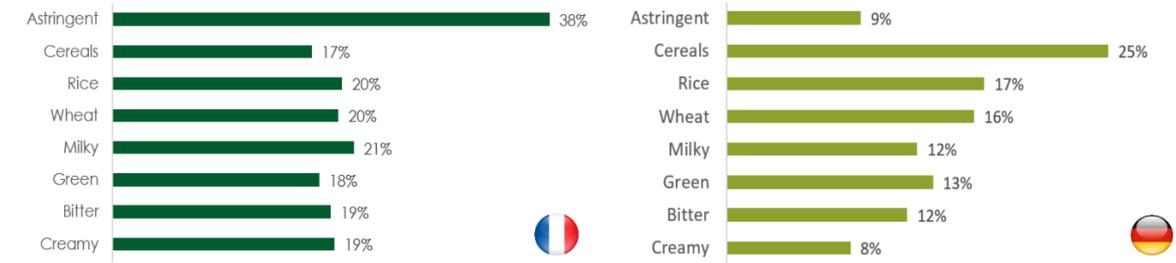
Figure 3: Sensory characteristics selection (soy drinks) FR vs DE

French and German consumers are sensitive to different sensory characteristics : astringency is the first cited item for the French, when it is cereals for the Germans for the soy drinks selection. (Fig 3)
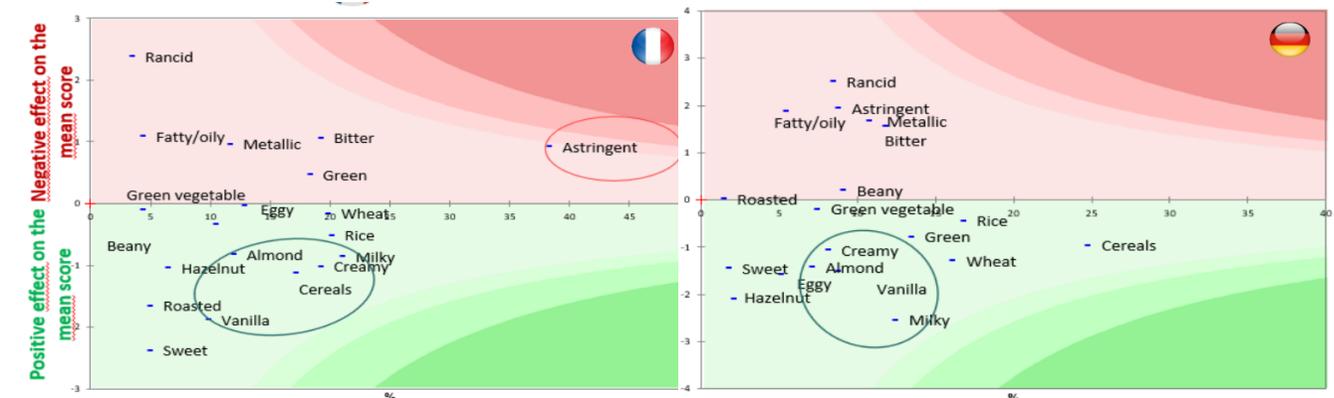

Figure 4: Penalty analysis (soy drinks) FR vs DE

For soy drinks, astringency is a penalizing criteria for French consumers, but not for German ones. None of them are considering the cereals or beany tastes as off-notes. Cereals could even be seen as positive as creamy or vanilla tastes for French consumers. (Fig.4)

CONCLUSIONS

Sensory criteria the most cited by consumers, are the ones that show a positive effect on the liking scores : **milky, creamy, vanilla, almond or cereals.** Sensory criteria with negative effect on liking scores are **bitterness, metallic, astringency and rancid**, even though they are not cited with a high frequency but they have an important impact when perceived. Other criteria such as **green, beany, roasted,** previously expected as off-notes, were not often cited and have globally no impact on the liking scores.
This study shows a clear cultural effect on the perceived off-notes in plant-based drinks and consumers have a rather high acceptance for the sensory characteristics linked to plant-bases such as cereals & beany tastes.