Extended Abstract

Paper/Poster Title	How does health-related information impact willingness to pay for olive oil? An incentivised lab experiment with Moroccan and Tunisian consumers

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Abstract	***191 words***
Olive oil is a key food product in Northern Africa in terms of both production and consumption. However, there is limited awareness of its health benefits among consumers, which may lead to consumption of lower quality products. Using an experimental auction that includes tasting and the progressive release of information, we reveal consumers' willingness to pay (WTP) for national brands of extra virgin olive oils that differ in terms of origin and polyphenol content. High polyphenol levels are associated to more pungent mouthful sensation and bitter taste but also higher health benefits. We provide this information along the process. We collect data from more than 200 urban consumers in each of Meknès (Morocco) and Sousse (Tunisia). We find that, differently from the literature, consumers have a significantly higher WTP for pungent/bitter oils before being informed about their health benefits, especially in Tunisia. Information on the link between these sensory characteristics and healthiness increases the WTP for pungent/bitter oils relative to non-pungent ones, and the gap persists at the following stage – a pattern common to both countries. Our findings suggest that clear and concise information can help increase consumption of healthier oils.	
Keywords	Extra virgin olive oil; Laboratory experiment; Northern Africa; Sensory characteristics; Consumer preferences
JEL Code	D12 Consumer Economics: Empirical Analysis; P46 Consumer Economics • Health; Q18 Food Policy

Introduction	***223 words***
Olive oil is a key food product in Mediterranean countries. Nevertheless, local consumers show limited awareness of its quality, particularly in Northern Africa. Moreover, healthier olive oils contain a higher quantity of polyphenols, resulting in bitterer taste and more pungent mouthfeel sensation which, based on the extant literature, tend to be disliked by most consumers, at least in developed countries. Therefore, if consumption choices are based exclusively on sensory characteristics, consumers would miss the opportunity to consume healthier oils. This calls for the need to increase awareness through the provision of clear and concise information. Given the above mismatch between preferences and health benefits, we test if providing information about the relationship between polyphenol content, pungency / bitterness, and healthiness impacts consumers' willingness to pay (WTP) for different olive oil brands. We hypothesise that consumers have lower WTP for pungent/bitter oils before receiving health-related information; that introducing labels about polyphenol content has no significant impact on WTP while labels about local origin increase it; that providing information about the relationship between polyphenols and health	

benefits increases WTP for pungent/bitter oils relative to delicate/sweet ones; and that this relative increase persists even when consumers experience the bitter/pungent sensory characteristic. We advance current studies by eliciting real preferences through an incentivised experiment, and by doing so in two Northern African countries, Morocco and Tunisia, comparatively.

Methodology	***250 words***

We focus on national olive oils. We elicit consumers' WTP through an incentivised lab experiment combining the 'Becker–DeGroot–Marschak' auction mechanism with eye-tracking. Consumers were asked to evaluate four olive oils along five stages, and to state their WTP. To avoid the hypothetical bias, at the end of the procedure the consumers had to purchase a randomly extracted oil at a randomly extracted price using their show-up fee if their WTP was equal to or greater than the extracted price. We selected two binary attributes, generating a full factorial design with four oils: origin (local *vs* non-local) and polyphenol content (low *vs* high). At each stage, additional information was disclosed, with the aim of assessing its impact on WTP: the taste (via actual tasing) at stage 1; origin and polyphenol content at stage 2; the link between polyphenols, bitter/pungent and healthiness at stage 3. All the information was linked together at stage 4 through another tasting. We randomised the order of the oils at each stage to ensure that the WTPs were independent between stages. The experiment took place in autumn 2022. We recruited urban consumers in Meknès (Morocco) and Sousse (Tunisia). The respondents were filtered based on consuming olive oil regularly and knowing the price of one litre with good approximation. The final sample size is 230 in Meknès and 208 in Sousse: 4,600 and 4,160 observations across all oils and stages. We estimated separate models for Tunisia and Morocco after converting WTP in $PPP for comparability reasons.

Results	***246 words***

Opposite to literature, our consumers prefer pungent oils: the average WTP was 13.31 $PPP for non-pungent and 15.17 $PPP for pungent oils in Tunisia ($p<0.001$); 23.84 $PPP and 27.23 $PPP in Morocco ($p<0.001$). Pungent oils were also preferred by those unaware of the health benefits. At stage 2, the WTP for olive oils with high polyphenol content increases significantly in Tunisia ($p<0.001$) but not in Morocco ($p=0.312$). Hence, the label on 'polyphenol content' does not have a univocal effect. In turn, the 'local origin' label does not attract higher WTP when introduced ($p=0.352$ in Tunisia; $p = 0.366$ in Morocco). Providing information about health benefits of high-polyphenol oils increases WTP significantly in both countries (1.47 $PPP, $p<0.001$ in Tunisia; 4.09 $PPP, $p<0.001$ in Morocco). In Tunisia, the increase of WTP for high-polyphenol oils is 1.7 times larger among previously unaware consumers, compared to those who declared to be aware ($p=0.024$), and in Morocco 1.6 times larger ($p=0.462$). The difference in the WTP for high-polyphenol oils between stages 3 and stage 4 (when consumers tasted again the oils and were able to link the taste with the rest of the information) is negative in both countries but not significant in Morocco (-0.40 $PPP, $p=0.005$ in Tunisia; -0.57 $PPP, $p=0.604$ in Morocco). The gap in favour of pungent oils decreases from 3.30 to 2.53 $PPP in Tunisia, $p<0.001$), and from 6.20 to 4.88 $PPP ($p<0.001$) in Morocco, but despite this rebound effect, the positive impact of information persists.

Discussion and Conclusion	***247 words***

Based on experimental results from Morocco and Tunisia, we found that consumers prefer pungent/bitter oils, which are also healthier, and are willing to pay more for

them. A concise message about polyphenols' health benefits increases this gap further, and the impact persists after consumers experience again the sensory attributes of the oils. These results allow to draw recommendations for promoting healthier and more diverse local diets among urban consumers. First, consumers have limited awareness of what constitutes a 'good' oil in theoretical terms (i.e., definition of 'extra virgin'), particularly in Tunisia, but they can appreciate quality when tasting. This is a solid basis to build upon for advertising high-quality food. Second, 'local origin' does not seem to be a value added (as already found for Tunisia using stated preferences), at least if compared to 'national' more in general. This can be a challenge if trying to link local producers with close urban markets, but also suggests that consumers may appreciate products from other regions in their country. Third, a concise message about health benefits is effective in driving consumers' preferences, and the effect persists even after consumers are confronted with sensory information that could push in the opposite direction. We did not use the official EU health claim, which may have limited or no meaning to a layperson, and suggest that the same approach is followed in labels. These recommendations apply to both countries, but more efforts are needed in Tunisia, where WTP is lower on average.