



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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Introduction

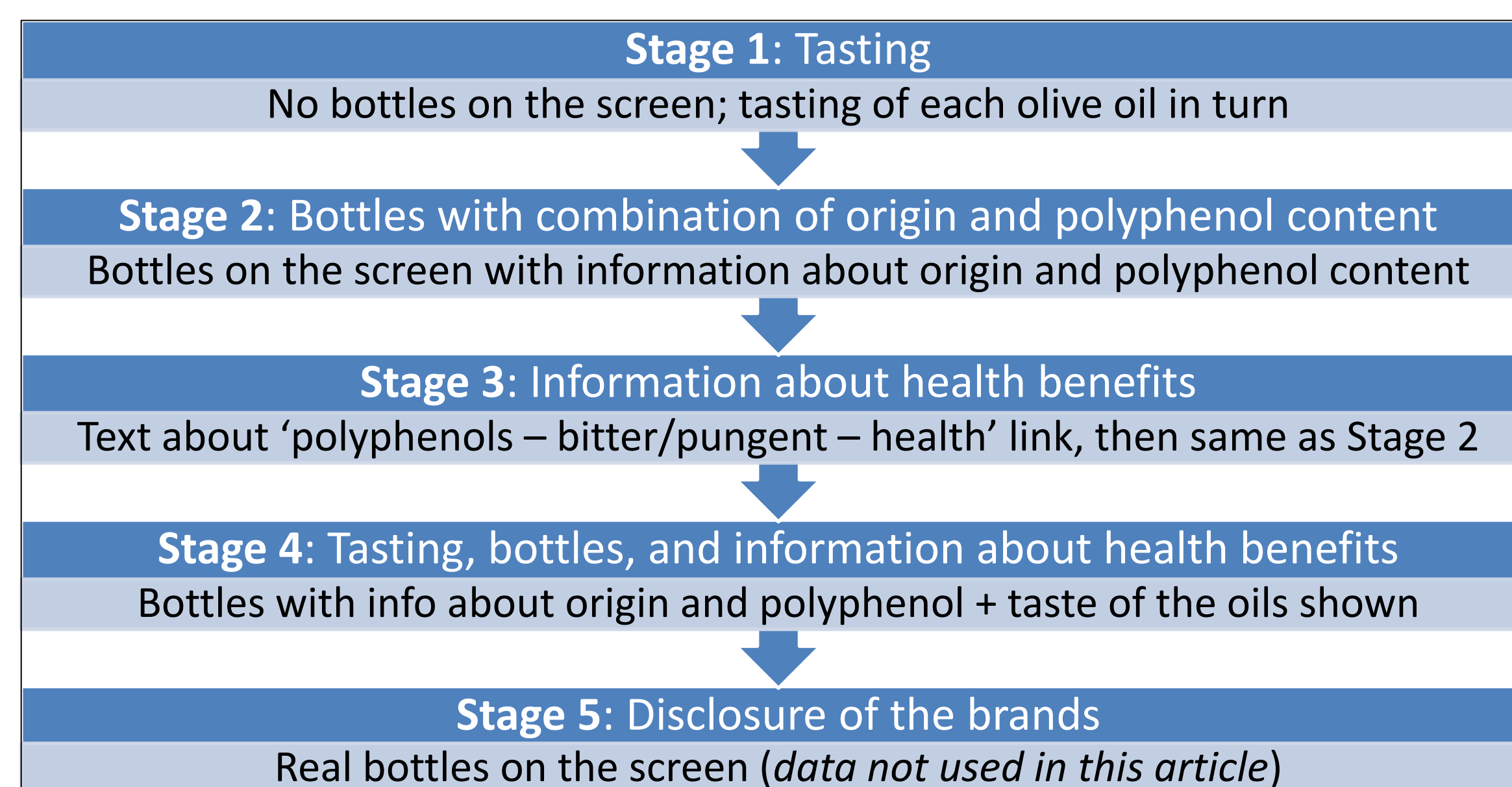
- Olives and olive oil are key agri-food products in the Mediterranean region, including Tunisia and Morocco
- Regular consumption of olive oil has significant health benefits thanks to polyphenols
- Nevertheless, higher polyphenol content results in bitter taste and pungent mouthfeel sensation
- Consumers in the Global North prefer olive oils characterized by sweet taste and low pungency
 - **Dilemma between health and taste**
- Despite growing body of evidence, no consensus on the impact of taste/polyphenols on consumers' preference for olive oil in Tunisia
- Almost no research on this topic in Morocco
- Extant studies use stated preferences approaches

Research Goals & Hypotheses

- Goals:**
 - Understand urban consumers' preferences for olive oil attributes in Morocco and Tunisia;
 - Assess if provision of concise information on the link 'polyphenols – bitter/pungent – health' can overturn disapproval for bitter/pungent.
- Rationale:**
 - Increased awareness can help consumers make more informed choices;
 - Better understanding of consumers' preferences can help producers improve and market more effectively their products
- Hypotheses:**
 - H1:** Consumers dislike bitter/pungent oils and have lower WTP for them before information
 - H2:** Introducing information on local origin increases consumers' WTP (**H2a**); while a label on polyphenols without contextualisation has no impact (**H2b**)
 - H3:** Providing information on the 'polyphenols – bitter – health' link increases WTP for bitter oils
 - H4:** The relative increase in WTP for high-polyphenol oils persists even when consumers are confronted with the bitter taste, despite a rebound effect

Data & Methods

- Novel protocol combining the 'Becker–DeGroot–Marschak (BDM) procedure' (Becker & DeGroot, 1974) with eye-tracking in a **lab experiment**
- Four products evaluated along five stages, with new information disclosed at each stage; **WTP** for each product at each stage
- Auction** at the end of the procedure: product, stage and price extracted → if $WTP \geq \text{price}$ → product purchased using part of the show-up fee
- Two binary attributes** selected – full factorial design with four oils: **(a) origin** (local vs non-local); **(b) polyphenol content** (low vs high)



- Urban consumers** recruited in Sousse (Tunisia) and Meknès (Morocco)
- Final sample: 208 in Sousse, 230 in Meknès → 4,160 and 4,600 instances of WTP
- t-tests** across products profiles and stages + random-effect Tobit models



Results & Discussion

- No significantly lower WTP for **pungent** oils in Stage 1 (**H1 not verified**): 13.52 vs 12.92 \$PPP (p 0.123) in Tunisia, and 24.82 vs 24.02 \$PPP (p 0.444) in Morocco; equally non-significant among unaware consumers
 - Opposite to most studies based on the Global North but in line with Ben-Hassine et al. (2022) on Tunisia
- Providing information about **origin** does not result in higher WTP for local oils (**H2a not verified**): 14.45 vs 14.32 \$PPP (p 0.352) in Tunisia; 24.71 vs 24.42 \$PPP (p 0.366) in Morocco
 - Contradict the bulk of literature but confirms Mtimet et al. (2013) on Tunisia (stated preferences)
- Providing information about **polyphenols** results in higher WTP for high-polyphenol oils in Stage 2 (**H2b not verified**): 14.89 vs 13.88 \$PPP (p 0.004) in Tunisia, and 25.43 vs 23.69 \$PPP (p 0.045) in Morocco
- Informing consumers about the '**polyphenols – bitter/pungent – health**' link increases WTP for high-polyphenol oils (**H3 verified**): +1.46 \$PPP (p 0.000) in Tunisia; +4.29 \$PPP (p 0.000) in Morocco.
 - Increase among all consumers, but 1.7 times larger for unaware ones in Tunisia, 1.6 times in Morocco
- 'Premium' for pungent oils reduces 3.27 to 2.54 \$PPP in Tunisia and 6.20 to 4.88 \$PPP in Morocco in Stage 4 but **impact of information persists (H4 verified)**: +1.04 \$PPP from Stage 2 (p 0.000) in Tunisia, +3.70 \$PPP (p 0.000) in Morocco

Table 1 WTP (\$PPP) and differences between rounds for oils with low and high polyphenol content and for consumers unaware and aware of the link with health, in Tunisia

	Tunisia	Stage 1	Stage 2	Stage 3	Stage 4
Low polyphenol oils	12.92	13.88	13.08	13.39	
diff. →	0.955***	-0.803***	0.324**		
High polyphenol oils	13.52	14.89	16.35	15.93	
diff. →	1.378***	1.462***	-0.404***		
Low polyphenol oils, unaware consumers	13.73	15.11	14.27	14.53	
diff. →	1.377***	-0.836**	0.258		
High polyphenol oils, unaware consumers	14.45	15.12	17.25	16.45	
diff. →	0.676*	2.127***	-0.799**		
Low polyphenol oils, aware consumers	12.71	13.56	12.76	13.1	
diff. →	0.845	-0.794***	0.341**		
High polyphenol oils, aware consumers	13.27	14.83	16.11	15.8	
diff. →	1.562***	1.287***	-0.301*		

Significance levels: *** 0.01, ** 0.05, * 0.10

Table 2 WTP (\$PPP) and differences between rounds for oils with low and high polyphenol content and for consumers unaware and aware of the link with health, in Morocco

	Morocco	Stage 1	Stage 2	Stage 3	Stage 4
Low polyphenol oils	24.02	23.69	23.32	24.3	
diff. →	-0.181	-0.424*	0.925***		
High polyphenol oils	24.82	25.43	29.52	29.18	
diff. →	0.652	4.293***	-0.567		
Low polyphenol oils, unaware consumers	18.7	21.64	21.79	21.73	
diff. →	2.943**	0.149	-0.056		
High polyphenol oils, unaware consumers	17.67	21.85	28.04	26.34	
diff. →	4.179***	6.182***	-1.694*		
Low polyphenol oils, aware consumers	25.11	24.12	23.63	24.83	
diff. →	-0.825*	-0.543*	1.129***		
High polyphenol oils, aware consumers	26.28	26.17	29.83	29.76	
diff. →	-0.07	3.902***	-0.334		

Significance levels: *** 0.01, ** 0.05, * 0.10

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Conclusions

- Opposite to expectations, consumers do not significantly prefer low-polyphenol (sweet) oils in either country
 - A **message about health benefits** increased WTP for high-polyphenol (bitter and healthy) oils
- We can draw **recommendations** for promotion of healthier and more diverse local diets
 - Limited awareness of what constitutes a 'good' olive oil in theoretical terms, but ability to appreciate quality when tasting – solid basis to promote healthy food choices
 - Official EU health claim may have limited or no meaning to laypersons – **concise message** about health benefits is effective, and could be used for informing consumers
- Limitations:** Most consumers still purchase olive oil in bulk; they might not purchase bottled olive oil
 Need of identifying actual olive oils: we had to limit the number of attributes
- Future research** could increase the number of rounds or introduce a new tasting with the real bottles



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