

Acidity between Proton and Bite: Why pH Alone Cannot Summarise Tasting

Culinary Judgment and Taste Chemistry — Ahmad Issam Maadarani

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This essay connects sour reception with the limits of chemical food measurements. It distinguishes pH from titratable acidity and resists treating one number as a complete account of sensory experience.

1. Mechanism and transfer limits

Teng and colleagues found that Otop1 inactivation markedly reduced cellular and neural acid responses in mice [TENG19]. This supports a proton-channel role in that system. The study alone does not fully explain human differences in food sourness or show that a dish with a particular chemical reading is better or more balanced.

2. Two measurements, two questions

pH expresses hydrogen-ion activity on a logarithmic scale. Titratable acidity describes the amount of base needed to reach a specified endpoint using a stated method. The latter depends on protocol rather than being method-free. Samples can have similar pH but different titratable acidity, or the reverse. Neither measure automatically substitutes for the other.

3. Relevant human evidence

Norris and colleagues studied human responses to acids while varying pH, titratable acidity and anion composition [\[NORRIS84\]](#). Their design motivates attention to several variables without supplying a universal equation for every sauce. These measurements do not explain every perceptual difference by themselves. A complex food carries additional factors requiring control or documentation.

4. Hypothetical example

Two sauces use different edible acidic additions. If aroma, viscosity and sweetening differ too, asking which acid is gentler exceeds the design's explanatory reach. Assess the complete sauces or design a narrower comparison. In the latter, specify measurement method, sample temperature and composition, then collect intensity and persistence descriptions independently of instrument readings.

5. A separate safety question

pH matters to specified questions but alone is not a food-safety or preservation certificate. Sour taste cannot establish manufacturing or storage conditions. This essay separates sensory quality from safety verification. It provides no preservation protocol or instruction to use laboratory acids; examples concern foods suitable for tasting in appropriate circumstances.

6. A more precise decision

Report acidity's unsuitable intensity or persistence relative to purpose and tasting conditions. If chemical data are included, present methods and limits without replacing

observation. The purpose is not complicated wording but preventing “more acidic by one measure” from becoming “culinarily worse”. Measurement describes one aspect; balance requires a defined perceptible relationship within the product.

7. A Discussion Worksheet

Field	Question	What to Record
Measurement	pH or titration?	Declared method and endpoint.
Comparison	Did other properties change?	Recipe and serving conditions.
Decision	What sensory effect is required?	Description separate from safety verification.

Philosophical arguments belong to the author. Applications and worksheets are unvalidated proposals, and examples are hypothetical. This article presents no new experimental dataset, claim of worldwide priority or claim that this text has undergone peer review.

8. References and Source Limits

1. **[TENG19]**Teng, B., et al. (2019). Cellular and Neural Responses to Sour Stimuli Require the Proton Channel Otop1. *Current Biology*, 29(21), 3647–3656.e5. DOI: 10.1016/j.cub.2019.08.077.[Original research](#)

Cellular and neural mouse experiments; human transfer is limited. Source use: publication metadata and abstract; the full text was not reviewed for this edition.

2. **[NORRIS84]**Norris, M. B., Noble, A. C., & Pangborn, R. M. (1984). Human saliva and taste responses to acids varying in anions, titratable acidity, and pH. *Physiology & Behavior*, 32(2), 237–244. DOI: 10.1016/0031-9384(84)90136-7.[Original research](#)

Human acid-response study varying pH, titratable acidity and anion composition. Source use: publication metadata and abstract; the full text was not reviewed for this edition.

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