

“Supertaster” Lab Kit Instructions

Are you a Supertaster?

This kit includes: • PTC (Phenylthiourea) • Sodium Benzoate • Thiourea • Control Paper (chemical-free) each in a vial of 100 paper test strips	Need more strips? Order online by scanning the QR code ⇒  www.bartovation.com/super
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Background Information:

Taste test strips exhibit a taste due to a dominant allele on chromosome number seven. The ability to taste the compounds on the Phenylthiourea (also known as PTC) paper strip is present in about 70% of the U.S. population. The ability to taste is due to two different sets of alleles. Receptors on the tongue allow you to taste five major flavors – savory, sour, sweet, salty and bitter. Thus, their presence is a result of natural selection both for the plants which produce them and the animal which benefits from the ability to sense them. It is a benefit to be able to detect them and avoid bitter tasting foods, some of which might be harmful if swallowed. Hence, it is a trait selected for in populations evolving in an area which had/has such plants.

Our strips are made by dipping large sheets of specialty paper into a liquid solution of each chemical compound. The paper is then dried, leaving only the dry chemical compound on the sheet. Sheets are then cut into small strips and packaged into vials. Phenylthiourea (also known as PTC) can be tasted by approximately 70% of the U.S. population. It is also tied to the TAS2R38 gene, a member of the bitter taste receptor family.¹ Sodium Benzoate is often used as a preservative in foods and beverages such as pickles, fruit juices, and sodas. The Sodium Benzoate strips will either be tasteless, sweet, salty, or even bitter, depending on the individual. If you are not a taster for Sodium Benzoate you will not taste anything. The ability to taste Thiourea is genetically linked to PTC because they're similar chemicals, however, this doesn't mean you will have the same reaction to both. PTC and Thiourea are not identical, so some people may taste PTC but not Thiourea, or vice versa. The control paper is untreated paper with no chemical and is used as a placebo to control the experiment.

¹ Prodi DA, Drayna D, Forabosco P, Palmas MA, Maestrale GB, Piras D, Pirastu M, Angius A. Bitter taste study in a sardinian genetic isolate supports the association of phenylthiocarbamide sensitivity to the TAS2R38 bitter receptor gene. Chem Senses. 2004 Oct;29(8):697-702. doi: 10.1093/chemse/bjh074. PMID: 15466815.

Approximately 25% of the American population can taste the compounds on all three strips and nothing on the control. Within this 25%, supertasters have different levels of sensitivity. If a person can test the substance is determined by their phenotype, which is determined by the genetic genotype. We will denote supertasters with “T” and the recessive non-supertaster gene with “t”. This enables us to make this classification hierarchy:

Classification	Phenotype	Genotype
Normal Taster	Cannot determine the difference between substances or assumes control paper is something else.	__ __
Standard Supertaster	Can taste PTC and determine difference between PTC and control. If they can not taste PTC then they are not a supertaster. ²	__ t
Recessive Supertaster	Can taste everything but Sodium Benzoate	tt
Dominant Supertaster	Can taste Sodium Benzoate, Thiourea, and PTC	T __

This kit is designed to determine supertaster status utilizing a control placebo paper to reduce and control for error, increasing the validity of the experiment. The control paper is not treated with chemicals, and therefore can be used to give tasters a baseline for what “no taste” would be.

² This definition is based on the NHGRI activity entitled “PTC Taste Test Activity” , you can see the activity here: <https://www.genome.gov/Pages/Education/Modules/PTCTasteTestActivity.pdf>

Experiment:

1. Form groups of five and give each group member a number, 1 through 5.
2. To ensure the experiment is blind, set up a testing sheet (example on last page, which can be cut to separate participant samples), one for each person, with the strips laid out in this order:

	Round 1	Round 2	Round 3	Round 4
Participant 1	PTC	Control	Thiourea	Sodium Benzoate
Participant 2	Thiourea	PTC	Sodium Benzoate	Control
Participant 3	Thiourea	Control	PTC	Sodium Benzoate
Participant 4	Control	Sodium Benzoate	PTC	Thiourea
Participant 5	PTC	Thiourea	Control	Sodium Benzoate

3. Start with round 1, having every participant put their strip on their tongue for five seconds. Only part of the strip needs to come into contact with their tongue in order for the test to work.
4. Have each participant record the taste of the strip on the testing sheet, in the box they got the strip from.
5. Apply their results to the chart in the “background” section to classify them as a taster.

The American manufacturing facility where Bartovation taste test papers is a typical manufacturing site. The facility is not certified or considered an allergy-friendly manufacturing facility. In addition, the raw materials used in producing our taste papers are not procured in any special fashion. As a result, we have no assurance that they were produced in an allergen-free environment.

	Round 1	Round 2	Round 3	Round 4
Participant 1	1	2	3	4
Participant 2	1	2	3	4
Participant 3	1	2	3	4
Participant 4	1	2	3	4
Participant 5	1	2	3	4