

What are century eggs?

And where do those colors come from?

Century eggs, or pidan, are alkaline-fermented duck or chicken eggs. Originating in China, these odd-colored eggs have become a common comfort food made entirely by chemistry.

Starting Ingredients

To start off, the eggs are coated in a paste and rice husks and then left to sit in airtight storage for at least 20 days.

Feast for the Senses

Brown Egg White: The brown of the egg white comes both from the tea and from Maillard reactions—the same reaction that browns toast. The proteins and sugars that degrade in the egg white react with one another to produce a brown color.

Aroma: The unique aroma of century eggs comes from ammonia (NH₃) and hydrogen sulfide (H₂S) released by protein degradation.

Green Yolk: Iron and sulfide in the yolk combine to form iron (II) sulfide, granting that greenish color to the yolk.

Chemical Fermentation

What's going on while they ferment? First, sodium carbonate (Na₂CO₃), calcium oxide (CaO), and water (H₂O) react to produce sodium hydroxide (NaOH). The NaOH diffuses through the eggshell and disassembles the 3-dimensional protein structure of the egg white. The protein fragments interact with one another, and with water, and the runny egg white gets converted to a gel.

* How do you keep NaOH from liquefying everything during fermentation?

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