The “clean label” trick
The legal loophole in meat products

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“Free from” or just misleading?

1. What is this about?

Many people choose meat products labelled “Pure”, “additive-free” or “only natural ingredients” because they want to avoid preservatives, especially sodium nitrite (E250). In reality, however, it is often not that the manufacturer does not use nitrite, but that it creates the same compound in the product through another route.

The trick lies in the regulation and in the wording. Legally, the manufacturer is not lying, because the rules allow it to phrase things differently. But this misleads the buyer.

2. The two routes: what does the factory do?

The traditional route, which everyone knows:

The manufacturer takes the meat, mixes in E250 (sodium nitrite), and that is it. The label says: “sodium nitrite (E250)”. Honest and clear.

The new route, the “clean label”:

The manufacturer takes the meat. It does not add E250. Instead, it adds celery powder (or beetroot juice, spinach powder, “spice extract” - these are nitrate-rich vegetables). Then it adds a starter culture. This is nothing more than a bacterial culture, most often Staphylococcus carnosus.

And here is the key point: the bacteria consume the nitrate and release nitrite. The same compound that E250 would provide. Exactly the same. The meat contains the same nitrite, it gives the same colour and provides the same preservative effect.

The difference? E250 does not appear on the label.

3. What is the result?

Sodium nitrite is present in the final product, exactly the same compound we know as E250. It was simply not added directly, but formed through the reaction between the “spice extract” and the “starter culture”.

That is why it does not appear on the label as E250, but as “celery powder”, “spice extract” and “starter culture”. Formally, the manufacturer does not add sodium nitrite, but because of the technology, this compound still forms in the product.

From the point of view of the final result, the same thing happens: the body comes into contact with sodium nitrite.

4. Where exactly is the consumer misled? And why is it still legally allowed?

On the front of the label: In large letters it says “no nitrite added”. This is technically true, because the manufacturer does not put nitrite directly into the meat. But the bacteria create it. It is present in the final product.

On the back of the label: In small print, with an asterisk, something like “...except those naturally occurring” is written. Nobody reads it. The manufacturer complied with the rule because it wrote it down. But it did so in a way that makes the essential point disappear.

In the ingredients list: Celery powder, beetroot juice, “spice extract” and starter culture appear there. These do not sound dangerous. Celery? That is healthy.

In the regulation:

- **In the United States, under the current USDA (Food Safety and Inspection Service) rules, if nitrite enters the meat not as a synthetic additive but is formed “naturally”, the product must be labelled “Uncured” or “No nitrate or nitrite added”. In other words, the law requires this wording to be placed on the product. The manufacturer cannot decide otherwise. The regulation itself creates the misleading effect.**

- In the EU, celery powder must be listed among the ingredients, and the nitrite formed in the final product is also regulated. In addition, the European Commission’s SCoPAFF A.09 position classifies this practice as intentional additive use. But the wording “no added E250” can still be used here as well, and the buyer may likewise believe they are buying a nitrite-free product.

So the manufacturer is not breaking the law. The law gives it a tool to mislead the buyer. This is not legally punishable fraud. It is legally permitted misleading.

5. Why do they do this?

Because the buyer asked for it. People began avoiding E250. The manufacturer did not want to sell less. So they figured out how to sell the same product without E250, while the same thing is still present in the end. And the buyer is happy because they think they made a choice. But they did not!!

Marketing calls this “clean label”. The label is clean. The product is not.

6. The cancer risk

Simply put:

- **The “spice extract” contains nitrate**
- **The “starter culture” contains bacteria**
- **The bacterium converts nitrate into nitrite**
- **The final result is the same as if the manufacturer had directly added E250**

This nitrite may undergo further transformation in the body. Nitrosamines may form, which the International Agency for Research on Cancer (IARC) classifies as carcinogenic.

The “free from” claim therefore does not necessarily mean that the compound is absent. Often it only means that it was not added directly. From the point of view of the final result, however, the same thing happens.

7. What should you do if you do not want to be misled?

Turn the packaging around. Do not look at the large print, but at the ingredients list. If any of the following appears, you can know that nitrite has formed in the product:

- celery powder (celery powder / celery juice powder)
- beetroot juice / beetroot powder (beetroot juice / powder)
- spinach powder (spinach powder)
- starter culture (starter culture)
- kale juice / kale powder (kale juice / powder)
- “spice extract” (spice extract)

If you see these and the packaging claims “no nitrite added”, then exactly the method discussed here has been used.

8. Who says this? Benjalex did not invent it.

I did not make this up. The field has documented it. Here is the evidence:

“Celery powder, as a natural nitrate source combined with starter culture, is one of the most commonly used nitrite sources in natural and organic meat products.”

— American Meat Science Association (AMSA), Alternative Curing, professional publication

“Nitrite replacement often means the use of nitrate-rich vegetables with nitrate-reducing starter cultures or pre-converted nitrite powders to ensure sufficient nitrite production.”

— MDPI Foods journal, “Clean-Label Strategies for the Replacement of Nitrite, Ascorbate and Phosphate in Meat Products”, 2025

“Over the past 10 years, ‘natural curing’ processes have gradually developed from nitrate sources containing celery powder and starter cultures.”

— Sebranek, Joseph G. (Iowa State University), Jackson-Davis, A.L., Myers, K.L., Lavieri, N.A. — Meat Science, 2012

“We ask the authority to eliminate the requirement that such products be labelled ‘Uncured’ and/or ‘No Nitrate or Nitrite Added’.”

— Center for Science in the Public Interest (CSPI) — Petition 19-03, USDA FSIS, August 29, 2019

“Celery powder combined with starter culture is the most commonly used natural curing method, and from the point of view of the final result it does not differ from the addition of synthetic nitrite.”

— Yong, Hae In (Korea Food Research Institute / Chungnam National University), Kim, Tae-Kyung, Choi, H.D., Jang, H.W., Jung, S., Choi, Y.S. — Food Science of Animal Resources, 2021, 41, 173-184

“The European Commission’s SCoPAFF A.09 position classifies this practice as intentional additive use.”

— European Commission, Standing Committee on Plants, Animals, Food and Feed (SCoPAFF), A.09 position

9. Benjalex does not only read the label

Benjalex looks at what happens inside the product.

It is not enough to read what is written on the packaging. You have to look at what is inside and how it was formed. If a “free from” product contains the same compound as a product that is not “free from”, then the “free from” claim is meaningless. Or more precisely: misleading.

If the manufacturer could place a label saying: “This product was not cured with E250, but with celery powder and bacteria that produce exactly the same amount of sodium nitrite from celery nitrate as E250” - would you buy it?

No. Nobody would buy it. That is why they do not write it that way. That is why they write “no nitrite added”. And this is legally permitted. But it is still misleading.

Do not fall for it.

Sources: Yong H.I. et al. (Food Sci. Anim. Resour. 2021), Sebranek J.G. et al. (Meat Science 2012), American Meat Science Association (Alternative Curing), CSPI Petition 19-03 (USDA FSIS 2019), MDPI Foods (2025), European Commission SCoPAFF A.09 position.

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