

Biontech vaccine: No polydispersity test by the Paul-Ehrlich Institute

The Paul-Ehrlich-Institut apparently leaves the determination of mRNA concentration in coronavirus vaccines entirely up to the manufacturers. Professors express concerns.

For over a year, we, five professors at German and Swiss universities, have been trying to obtain information on the quality of the mRNA-containing pharmaceutical formulation Comirnaty from the manufacturer BioNTech, but especially from the responsible German regulatory authority, the Paul-Ehrlich-Institut (PEI). We are also interested in whether the PEI is fulfilling its duty to adequately control product quality. It should be self-evident that the quality of Covid preparations should be subject to particularly high requirements: After all, this is a completely novel drug technology in this area. With each dose, trillions of lipid nanoparticles (LNPs) loaded with genetically active ingredients, the mRNA, are administered intramuscularly. This genetically active modified mRNA (also known as modRNA) is the blueprint for the actual "active ingredient" of the drug. This is usually called an antigen and in this case is a spike protein of SARS-CoV-2. Unfortunately, in the approval of the drug, the mRNA is usually referred to as the "active ingredient," which can be confusing. In the case of a conventional drug, the administration of an active ingredient typically directly produces a desired reaction in the body. The mRNA, on the other hand, only enables the body to produce the active ingredient through complicated mechanisms. The complex interactions of LNPs, ingredients, and spike proteins, which are potentially produced anywhere in the body and especially in the immune system during the intended genetic programming, are far from fully understood. And last but not least, many citizens have entered into the special risk of this novel medical treatment not voluntarily, but because of repressive measures.

Our persistent inquiries and legal insistence have borne fruit. The answers we have now received are relevant for public health, as well as informative regarding which specific topics the PEI refuses to disclose information on. Our main concern was the relevant aspects of quality control, which ingredients are administered in what quantities per dose. To achieve this, it is certainly necessary to know the size distribution of the LNPs and their composition precisely. Therefore, we asked about size distribution, permitted deviations, measurement methods, and whether the PEI conducts random checks on finished drug products to ensure compliance with regulations.

To our surprise, in its latest letter of February 10, 2023, the PEI informed us that it does not conduct such tests. The "polydispersity test" is "part of the batch testing of BioNTech..., but not carried out by the Paul-Ehrlich-Institut itself." Furthermore, "control methods for the analysis of mRNA concentration determination and distribution in multi-dose containers are not part of the batch testing," and thus "no official information" is available on this matter.

If there is no reliable information available to the PEI regarding the control method for the distribution of mRNA between LNPs and dispersion medium in multi-dose containers, then we conclude that the PEI does not verify whether the mRNA is fully encapsulated within the LNPs or whether it is directly dissolved in the dispersion medium. The PEI should be aware that free mRNA in the bloodstream can lead to thrombosis. If the efficient packaging of mRNA within the LNPs is not checked by the PEI, then how can we speak of monitoring the safety of the so-called vaccines during batch release by the PEI?

Our questions about the coloration of the LNP preparation, which is an expression of the particle size distribution, among other factors, have not been answered properly by the PEI so far, but only evasively. It is unclear whether the PEI carries out random checks on finished drug products, and if so, what exactly is being tested, or how turbidity and coloration are being evaluated.

In an interview with the Berliner Zeitung on September 2, 2022, the President of the PEI, Professor Klaus Cichutek, stated that the permissible size range of the LNPs is between 40 and 120 nm. This permissible size range was also mentioned by an employee of the PEI, Dr. W., in a hearing before the Federal Administrative Court in Leipzig. However, we have not officially received any information from the PEI regarding the permissible size range for LNPs.

The PEI has also informed us that it considers information about tolerance ranges for the quantities of all ingredients to be a trade secret of BioNTech. Shouldn't the PEI specify how much of a substance must be included or must not exceed in a medication? And shouldn't this information be accessible to the patient as well?

Due to the specifications of the European Pharmacopoeia, one can rely, for example, on the fact that in a tablet of aspirin, the active ingredient acetylsalicylic acid is actually contained in the amount of 500 mg as indicated in the package insert, and not only a third of the amount, which would hardly have the desired effect in an adult. However, with Comirnaty, it is actually allowed for the dose of mRNA per single dose to contain 37.8 micrograms instead of the indicated 30 micrograms, or only 8.9 micrograms, as suggested by information in a report from the European Medicines Agency (EMA) from November 19, 2020 that we have access to. Information about the content of active and auxiliary ingredients, as well as details about the LNPs, are important for both the doctor and the patient to have before treatment, as they are crucial for assessing the benefit-risk ratio.

If neither the doctor nor the patient nor the PEI (Paul-Ehrlich Institute) really knows which dose is being administered, then a meaningful risk assessment cannot be made. This is particularly true given that the mechanism of action in general, the amount of spike protein produced by the organism per administered mRNA molecule, and the distribution and duration of mRNA in the body are still largely unknown. A scientifically justified trust in a positive benefit-risk ratio for the use of mRNA-containing preparations to protect against severe Covid-19 disease cannot be established for such drug formulations.

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