Human recombinant EGF as a drug

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Letter to Editor

I have read with great interest an article published in your journal, presented by J. Esquirol and E. Herrero, regarding the potential therapeutic uses of Recombinant Human Epidermal Growth Factor (rh-EGF) (1). It is a review of the potential indications that rh-EGF may have in topical applications, particularly for dermatological conditions (in the form of creams or emulsions) and ophthalmological conditions (in the form of eye drops). The introduction states, without providing any bibliographic reference, that rh-EGF can be formulated in an active and stable form for clinical use, without side effects and with complete safety for extended periods of time.

The current reality is that rh-EGF is not authorized as a medical treatment and can only be used for clinical trials. All attempts by the pharmaceutical industry to commercialize a cream or eye drops containing rh-EGF have failed. The problem lies in the complete instability of the molecule, which rapidly loses the conformation of its tertiary structure. It is well known that obtaining a recombinant replica of 53 amino acids is not sufficient; six cysteine residues must be correctly positioned to form three disulfide bridges for the ligand (EGF) to bind to its receptor (EGFR) (2,3).

The authors mention, citing one of my own publications, that EGF eye drops are effective and safe for ophthalmological treatments (4). They refer to a meta-analysis of clinical trials we published in 2012, which showed excellent short-term results for rh-EGF eye drops but did not evaluate any medium or long-term safety data. More than 10 years have passed, and none of those eye drops have made progress. Rh-EGF eye drops do not exist in pharmacies. They are only marketed in China, and

the molecule is as inactive as the so-called sh-oligopeptide-1 used in cosmetics.

Similarly, no product containing pharmaceutical-grade rh-EGF for topical application on the skin can be found. Instead, numerous cosmetic brands boast about including EGF in their products. These are recombinant molecules synthesized in the manner described by J. Esquirol and E. Herrero, but they have not demonstrated pre-clinical efficacy and are being irregularly used for clinical trials in patients. Cosmetics are being used to treat diseases, which is a serious issue and goes against medical norms. European and North American legislation prohibit identifying EGF in the composition of cosmetics. Instead, it appears under the name of sh-oligopeptide-1, which can be considered the cosmetic variant of EGF. What the authors possibly do not know is that many of the clinical trials cited in the references were not conducted with a drug but with a cosmetic product that does not even specify dosage in its composition.

Reviewing the literature published until March 2023, nearly twenty improper "clinical trials" can be found, conducted with the cosmetic sh-oligopeptide-1. It is referred to as sh-EGF (synthetic human EGF) or even rh-EGF, similar to the one used by the pharmaceutical industry in trials.

The day an active and stable EGF product is achieved, it should be studied as a drug, not a cosmetic, and it should be the pharmaceutical industry, not the cosmetic industry, responsible for its development. Rh-EGF is not a cosmetic; it is a potent drug with potential risks, especially cancer (5). Health authorities should closely monitor these cosmetics, as current advances may lead to the synthesis of risky molecules without sufficient oversight. Scientific journal reviewers should not accept any studies involving cosmetics to treat diseases, and ethics committees should not approve clinical trials with cosmetics that do not meet any efficacy guarantees for testing and fall outside medical norms. If any of these recombinant peptides that imitate growth factors show any type of biological activity, they should be considered drugs with potential risks (5).

Finally, the authors state that active and stable rh-EGF can be obtained through compounding in a pharmacy, but they do not provide any

bibliographic reference. I have spent 20 years trying to find this citation. It did not exist in 2015 when this article was published, and it does not exist now.

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