

C0r0n@ 2 Inspect

Review and analysis of scientific articles related to experimental techniques and methods used in vaccines against c0r0n@v|rus, evidence, damage, hypotheses, opinions and challenges.

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Graphene patents for fertilizers and phytosanitary products: Part 2

Introduction

1. Continuing with the revision of [patents for fertilizers and phytosanitary products \(part 1\)](#) , this entry shows new evidence and methodologies for the manufacture and production of this type of product for agricultural use.
2. It should be borne in mind that " *graphene oxide is absorbed by the roots of plants and disseminated through their stems, leaves and fruits, as stated in the work of (Wang, X.; Pei, Y.; Lu, M.; Lu , X.; Du, X. 2015). Although it has been warned in all the articles of this blog, we must not forget the harmful effect of graphene oxide and its derivatives on health. Graphene oxide GO is responsible for causing [adverse, toxic effects in the human body](#) , [neurodegenerative diseases](#) , [cell destruction](#) , [thrombosis](#), [cytokine storm](#) , among other effects of c0r0n @ v | rus. "*

Other patents

1. **Patent (KR20210040597A. 김장호 ; 박선호 . 2019)**
 - It is a " *composition for the improvement of crops comprising graphene oxide nanofilms* ". Specifically, the aim is to " *accelerate plant growth and minimize environmental pollution* ." To do this, the authors propose the use of graphene oxide nanosheets that can be injected into the stem of the crop or directly into the land occupied by the roots of the plants. The graphene oxide composition will be contained in a solution of between 500 to 15,000 µg / ml. The crops tested are wheat, lettuce, tomato, eggplant, spinach, celery, watermelon, strawberry, melon, mango, banana and orange.
 - According to its justification, " *the excessive use of chemical products has promoted the appearance of genetic tolerance in plants and crops, and the accumulation of these products in the soil and water can cause serious environmental pollution* ." This is paradoxical if one takes into account that graphene oxide is a pollutant, toxic, harmful to health.
 - It is also recognized in the introductory text that the use of nanomaterials in crops, such as graphene oxide, helps to solve several problems, for example " *it has been shown that carbon nanotubes can penetrate plant cell walls, its DNA ... being an effective platform to deliver growth-promoting molecules ... only a small amount of nanomaterials is required* ." "This confirms that graphene oxide can enter in the DNA of plants, but also of people, see (Zhang, H.; Huang, H. ; Lin, Z.; Su, X. 2014 | Liu, Y.; Luo, Y.; Wu, J.; Wang, Y.; Yang, X.; Yang, R.; Zhang, N. 2013 | Di -Santo, R.; Digiacomio, L.; Palchetti, S.; Palmieri, V.; Perini, G.; Pozzi, D.; Caracciolo, G. 2019).

2. Patent (CN106747954A. 张青 ; 卢瑞 ; 田裕 ; 宝刘 ; 玉生 . 2017)

- A fertilizer that is applied directly on the leaves (foliar) is described, which contains graphene powder, crop fertilizer and nutrients. The weight ratio of fertilizer to graphene is 10: 1 to 0.01: 99.9. According to the authors, the compound helps to activate plant growth and increase its production.
- The graphene-based fertilizer can be nitrogen, phosphate, potassium, trace elements, amino acids, etc.
- The graphene used to make the composition described in the patent comes from " *Chinese section Suzhou Nano Technique & Nano Bionic Research Inst.* " .
- The patent refers to various recipes for fertilizers, an example: " *three-dimensional building powder 30% graphene, (crop fertilizer) glutamic acid 0.5%, Nafusaku 0.1%, alkyl phenol polyethenoxy ether formaldehyde condensation products sulfate 5%, wetting agent T 2 %, (crop fertilizer) potassium sulfate 8%, (fertilizer material for crops) magnesium nitrate 1%, (fertilizer for crops) calcium nitrate 2%, (fertilizer for crops) diammonium phosphate (DAP) 17%, 100% diatomite supplies* "

3. Patent (CN108925577A. 林荣铨 . 2018)

- An antibacterial agent containing graphene oxide is disclosed to prevent "phytophthora" rot of plants. For this, the biocidal compound uses graphene oxide and an antagonist bacterium of the "phytophthora", which is the " *bacillus atrophaeus*. " It is a species of bacteria used in biomedicine and in biocontainment and decontamination procedures (Szabo, JG; Rice, EW ; Bishop, PL 2007). It should be mentioned that "bacillus atrophaeus" has been used in various experiments and tests to simulate the decontamination processes of carbon @ v | rus, curiously using graphene oxide, see (Shah, KW; Huseien, GF 2020 | Balasubramaniam, B.; Prateek; Ranjan, S.; Saraf, M.; Kar, P.; Singh, SP; Gupta, RK 2020 | Kchaou , M.; Abuhasel, K.; Khadr, M.; Hosni, F.; Alquraish, M. 2020).
- The antibacterial agent is prepared in a solution of 3 to 20 grams of graphene oxide per liter and a 100: 1 ratio of bacillus atrophaeus. It has been tested and recommended in cucumber, soy, pepper and lychee crops.

4. Patent (CN112293419A. 李雪松 ; 程鹏 ; 刘富康 . 2021)

- Pesticide containing graphene oxide made according to the following recipe " *component A is chlorfenapyr: 5-10%; component B is indoxacarb, or emamectin benzoate, or methoxyphenozide, or chlorantraniliprole: 0.5-10%; synergist component graphene oxide GO: 10-20 %; sodium alkyl sulfate emulsifier: 2-5%; polyoxyethylene ether dispersant: 1-5%; ethylene glycol or propylene glycol antifreeze agent: 1% -5%; sodium benzoate preservative: 0.2% - 0.5%; magnesium aluminum silicate thickening agent : 0.2-0.5%; organic silicon defoaming agent: 1-3%; deionized water as a supplement* " .
- The authors also add " *The invention aims to provide a pesticidal composition containing graphene oxide, which effectively improves the control effect of pesticides on pests, reduces the amount of pesticide use and ensures food safety on the basis of not increasing the amount of use and the times of use of pesticides. It also has a low toxicity for humans and livestock and is respectful with the environment .* "

5. Patent (CN108782610A. 林荣铨 . 2018)

- Patent very similar to (CN108925577A. 林荣铨 . 2018) since it raises the same objective of eliminating or reducing the growth of the pseudo-fungus phytophthora in the roots of crops. However, in this case, graphene oxide is combined with the antagonist fungus "*penicillium purpurogenum*", an aerobic pathogen, used in industry to facilitate the release of sugars in fermentation processes, or as a bi-bleach in industry. of the paper.

6. Patent (CN111149798A. 贾金亮 ; 胡鹏通 ; 徐汉虹 ; 朱丽 ; 郑烽 . 2020)

- "*Water-based graphene oxide nanopesticide to prevent and control fungal diseases of crops*"
- "*Bactericide in water-based graphene oxide nano pesticide adhere to the surface of graphene oxide through pi-pi conjugation effect, hydrogen bonding effect and electrostatic adsorption effect, fungal cells are damaged through graphene oxide and then the drug is precisely released*"
- In the introduction of the invention it is explained "*Graphene oxide is a derivative of graphene and has a surface rich in oxygen-containing functional groups, so that graphene oxide shows good solubility and stability in water. Meanwhile, the Graphene oxide also has the ability to load the drug with the benzene ring-like structure by accumulation of pi-pi, hydrophobic effect and hydrogen bonding effect, so graphene oxide is widely applied in the field of biological medicine. nanomaterial is called a nanoblade and can cut the cell membranes of bacterial cells*" This is very interesting, since it describes the effect of graphene oxide nano-blades, capable of cutting the cell membrane with their edges, since they act like a nano-scalpel. Further on they point out "*The normal metabolism of cells Bacterial bacteria can be affected by an oxidative stress mechanism, thus causing cell death. In addition, when a large amount of graphene oxide nano-sheets is adsorbed on the surface of bacterial cells, the bacteria can become completely engulfed, so that the bacteria are physically isolated from the surrounding environment and the microorganisms slowly die.*" which comes to recognize that in effect graphene oxide causes oxidative stress (ROS reactive oxygen species) and the release of free radicals. This effect has already been described among the serious damages that graphene oxide causes in the human body, see (Pelin, M .; Fusco, L.; Martín, C.; Sosa, S.; Frontiñán-Rubio, J.; González-Domínguez, JM; Tubaro, A. 2018 | Russier, J.; Treossi, E.; Scarsi, A. ; Perrozzi, F.; Dumortier, H.; Ottaviano, L.; Bianco, A. 2013 | Liao, KH; Lin, YS; Macosko, CW; Haynes, CL 2011).
- Regarding the preparation of the nanopesticide, the patent defines 9 different recipes. An example of elaboration is the following: Graphene oxide solution variable between 0.5-1 gram per liter of water. Addition of the bactericide to be used dissolved in dimethylsulfoxide NN dimethylformamide at a concentration of 1.25: 1 - 3.75: 1. The nanopesticide has been mainly tested in rice crops.

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