# 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.

## Thursday, July 29, 2021

### Graphene patents for fertilizers and phytosanitary products: Part 1. Pseudomonas aeruginosa

**Reference**

Losic, D .; Kabiri, S .; McLaughlin, M .; Tran, D .; Andelkovic, I. (2021). [Patent WO2018107212A1]. Graphene for fertilizer applications = Graphene for fertilizer applications. https://patents.google.com/patent/WO2018107212A1/en | https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2018107212

**Introduction**

1. Returning to the investigation of graphene oxide in agriculture , this time an analysis of the patents related to graphene oxide is carried out, especially those referring to fertilizers, phytosanitary products, pesticides and biocides. It must be taken into consideration 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 on this blog, we must not forget the harmful effect of graphene oxide and its derivatives on health. Note that GO graphene oxide is responsible for causing adverse, toxic effects on the human body , neurodegenerative diseases , cell destruction, thrombosis, cytokine storm , among other effects of c0r0n @ v | rus.

**Facts**

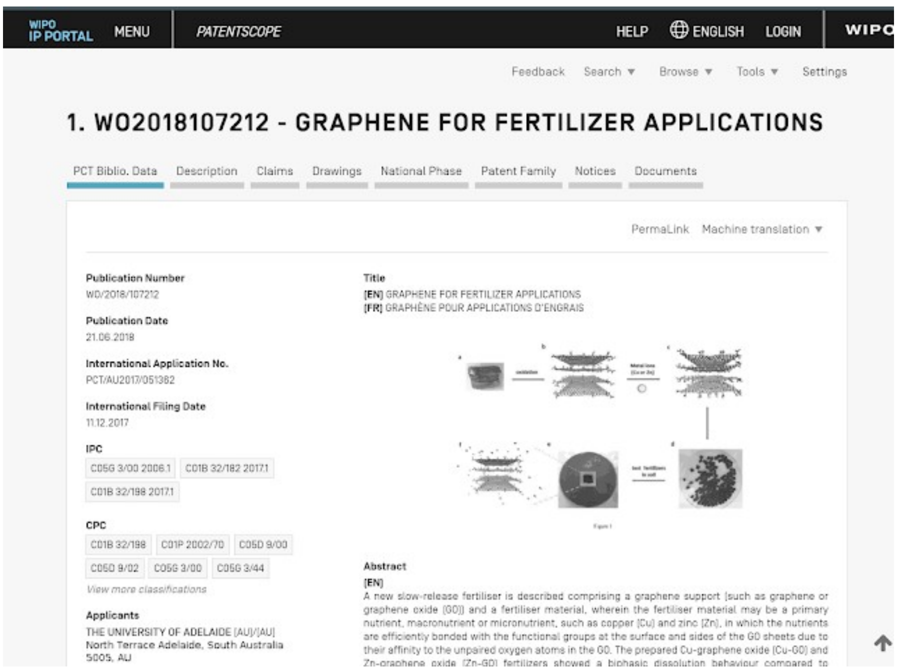


*Fig. 1. Screen printing from patent WO2018107212A1*

1. The patent, presented by researchers at the University of Adelaide, describes a new range of slow-release fertilizers, based on a graphene or graphene oxide GO vector, which can contain the nutrients that are desired to be released on the ground in which they are they find the crops. These nutrients can be copper (Cu), zinc (Zn), although it can adapt to other compounds such as iron (Fe), manganese (Mn), boron (B), cobalt (Co), chlorine (Cl), chromium ( Cr), nickel (Ni), or potassium nitrate, case analyzed in a previous post, as indicated (Zhang, M.; Gao, B.; Chen, J.; Li, Y.; Creamer, AE; Chen, H. 2014). The main advantage described compared to other fertilizers such as zinc sulfate ($ZnSO_4$) and copper sulfate ($CuSO_4$) is the better dosage in the release of micronutrients, which allows to obtain a better performance in the growth of crops.
4. The justification present in the background of the patent indicates that due to the loss of micronutrients, intensive production, the adsorption of nutrients in clays and their filtration in deeper layers, the effectiveness of fertilizers is considerably reduced. In this sense, the gradual release of fertilizers allows micronutrients not to be lost, adapting to the assimilation times of the plants. In fact, it is stated that " *Theoretically, the benefits of SRF include the sustained correction of mineral deficiency and the reduction of the frequency of fertilization required, which consequently minimizes associated costs and environmental contamination*."This is paradoxical and contradictory to what is known about the toxicity of graphene oxide.
5. In the claims section, the methodology to create fertilizers of "... *aluminum sulfate, amino acid salt, ammonium chloride, ammonium molybdate, ammonium nitrate, ammonium phosphate, ammonium phosphate sulfate, ammonium sulfate. , borax, boric acid, calcium ammonium nitrate, calcium silicate, calcium chloride, calcium cyanamide, calcium nitrate, copper acetate, copper nitrate, copper oxalate, copper oxide, copper sulfate, phosphate of diammonium, iron-ethylenediamine-N, N-bis , iron-ethylenediaminetetraacetic acid, elemental sulfur, ferric sulfate, ferrous ammonium phosphate, ferrous ammonium sulfate, ferrous sulfate, gypsum, humic acid, ammonium iron polyphosphate, iron chelates, iron sulfate, lime, magnesium sulfate, manganese chloride, manganese oxide, manganese sulfate, monoammonium phosphate (MAP), monopotassium phosphate, polyhalite, potassium bromide, potassium chloride (MOP), potassium nitrate,potassium polyphosphate, potassium sulfate, sodium chloride, sodium metasilicate, sodium molybdate, sodium nitrate, potassium sulfate (SOP), potassium-magnesia sulfate (SOP-M), superphosphate, triple superphosphate, urea, urea formaldehyde, zinc oxide, zinc sulfate, zinc carbonate, zinc phosphate, and zinc chelates*", in the form of salt, macronutrient or micronutrient combined with granulated graphene oxide.

**Other patents**

1. The patent (CN108991005A. 林荣 铨 . 2018) develops phytosanitary applications for graphene oxide combined in symbiosis with "p *pseudomonas*", for the treatment of the germ" phytophthora "in crops. This detail is especially relevant since pseudomonas, and specifically" pseudomonas aeruginosa "were present in patients with c0r0n @ v | rus and respiratory distress syndrome. For example, the case presented by (Valenzuela-Molina, LC; Arrambí-Díaz, C.; Morales-Barraza, JA; Ramírez-Campaña, JC 2020) showed that the patient presented pseudomonas aeruginosa in proportions greater than 100,000 CFU (colony-forming units The clinical case was resolved with a treatment based on chloroquine, azithromycin and oseltamivir for four days. This coincides with the good results obtained by chloroquine and hydroxychloroquine for patients with c0r0n @ v | rus, see (Chacón-Acevedo, K.; Pinzón, C.;

Barrera, A.; Low-Padilla, E.; Yomayusa-González, N. 2020 | Pimentel, J.;Andersson, N. 2020 | Mayayo-Vicente, S .; Salvanés, FR; Gallego-Arenas, A .; Sánchez-Gómez, LM; Ruiz-López, M .; Garcia, BS; Novella-Arribas, B. 2020 | Ferner, RE; Aronson, JK 2020 | Meo, SA; Klonoff, DC; Akram, J. 2020 | Sahraei, Z .; Shabani, M .; Shokouhi, S .; Saffaei, A. 2020). However, the case of pseudomonas aeruginosa with c0r0n @ v | rus is not an isolated event. Performing a more exhaustive search reveals that since 2020 there are more than 7,000 scientific articles that report " *coinfections* " of " *pseudomonas aeruginosa*"with c0r0n @ v | rus, see (Qu, J.; Cai, Z.; Liu, Y.; Duan, X.; Han, S.; Liu, J.; Yang, L. 2021 | Perez, LRR, Carniel, E.; Narvaez, GA 2021 | Hughes, S.; Troise, O.; Donaldson, H.; Mughal, N.; Moore, LS 2020 | Rawson, TM; Moore, LS; Zhu, N.; Ranganathan, N.; Skolimowska, K.; Gilchrist, M.; Holmes, A. 2020 | Lansbury, L.; Lim, B.; Baskaran, V.; Lim, WS 2020). Therefore, this shows that there is a correlation between graphene oxide phytosanitary products with pseudomonas fungi (indicated in the patent) with the symptoms and infections described in the scientific literature of c0r0n @ v | rus patients. However, the findings concerning " *Pseudomonas aeruginosa* " and rust graphene GO, they do not end here . A study has been found regarding the "*Antibacterial activity mediated by oxidative stress of graphene oxide and reduced graphene oxide in Pseudomonas aeruginosa* "dating from 2012, see (Gurunathan, S.; Han, JW; Dayem, AA; Eppakayala, V.; Kim, JH 2012), in which the ability of graphene and graphene oxide to combat Pseudomonas aeruginosa is investigated. This study concludes that graphene and graphene oxide can reduce the cell growth of the bacterium Pseudomonas aeruginosa, through of the generation of ROS (reactive oxygen species - reactive oxygen species) in its process of reduction to "rGO" or what is the same, the liberation of free radicals by oxidation of graphene oxide. However, this study contrasts to that of (Fraud, S.; Poole, K. 2011) in which they state the following "*Although ROS are known to damage DNA and therefore have the potential to be mutagenic, the higher frequency of resistance observed for peroxide-treated pseudomonas aeruginosa cannot be explained by ROS-promoted mutagenesis, as its effect is lost in strains lacking PA5471* " (The PA5471 gene is responsible for the response to antimicrobials / antibiotics). "*The observation, too, that hyperexpression of PA5471 in the absence of peroxide provides a similar increase in the frequency of resistance to aminoglycosides, maintains that ROS increase the frequency of resistance as a consequence of their positive impact on the expression of PA5471*". This would demonstrate that the bacterium pseudomonas aeruginosa, when exposed to the ROS of graphene oxide GO, would cause an effect opposite to that originally observed (biobactericide), generating resistance, due to" *a selective pressure for mutations that ultimately affect susceptibility to aminoglycosides , possibly through their influences on the expression of additional genes in pseudomonas aeruginosa* . "This would also explain why graphene oxide acts in symbiosis with pseudomonas aeruginosa in 2018 (patent publication time) and not in 2012 (when its interaction with graphene oxide was studied). In other words, a resistance effect could have occurred as a result of the reduction of GO graphene oxide.

**Feedback**

1. The extensive development of patents on fertilizers and phytosanitary products seems to be demonstrated, in which graphene oxide is used as a vector material, which is assimilated in crops, both to favor plant growth, increase production in crops, as well how to avoid pests, fungi and diseases. The evidence is overwhelming and incontestable, as will be presented in subsequent publications, see part 2 , 3 and 4. [Pending publication]
2. If it is confirmed that the fertilizers and phytosanitary products used in crops contain graphene oxide, it could be said that there is a new route of contamination, by which the population could be poisoning itself.

3. It is clear that graphene oxide and pseudomonas phytosanitary products to combat the phytophthora germ in crops (CN108991005A. 林荣 铨 . 2018) could be related to co-infections of  c0r0n @ v | rus . This fits perfectly with the clinical picture (respiratory problems, bilateral pneumonias, respiratory syndromes and even oxidative stress), the effects of the bacteria and their combination with graphene oxide "GO". It is not surprising that the typical medication to combat this type of lung infections is chloroquine and hydroxychloroquine, as indicated by the scientific literature consulted.

**Hypothesis**

1. It is possible that GO graphene oxide, eminently toxic and harmful to health, is not the only factor that can be inferred in the c0r0n @ v | rus tables, since pseudomonas aeruginosa has been found in coinfection in a large part of the cases referred to in the scientific literature. This suggests a clear correlation between c0r0n @ v | rus, graphene oxide, and pseudomonas aeruginosa.
2. The research on graphene oxide and pseudomonas aeruginosa dates from at least 2012 and the patent for phytosanitary products that uses the symbiosis between graphene oxide and the aforementioned bacterium dates from 2018. Therefore, it would not be impossible to think that the pseudomonas aeruginosa may have developed resistance to graphene oxide, to the point of coexisting in symbiosis and seriously affecting people's health, through contaminated food, vegetables, cereals. This would explain the virulence with which it affected and the difficulty in its elimination, even with available antibiotics. The theory of resistance to graphene is justified by multiple investigations that try to find antibacterial agents capable of eliminating or limiting the growth of pseudomonas aeruginosa, see (Karaky, N.; Kirby, A.; McBain, AJ; Butler, JA;El-Mohtadi, M .; Banks, CE; Whitehead, KA 2020 | Nadres, ET; Fan, J .; Rodrigues, DF 2016 | JankauskaitĿ, V .; VitkauskienĿ, A .; Lazauskas, A .; Baltrusaitis, J .; ProsyĿevas, I .; AndruleviĿius, M. 2016). It is also possible that the bacterium Pseudomonas aeruginosa has been genetically edited to resist graphene oxide, which would explain that it could work in symbiosis, as indicated by the patent (CN108991005A. 林荣 铨 . 2018).

**Bibliography**


1. Chacón-Acevedo, K .; Finch, C .; Barrera, A .; Low-Padilla, E .; Yomayusa-González, N. (2020). Efficacy and safety of chloroquine, hydroxychloroquine, and azithromycin in COVID-19 patients. Summary of evidence. Colombian Journal of Nephrology, 7, pp. 21-41. https://doi.org/10.22265/acnef.7.supl.2.469
2. CN108991005A. 林荣 铨 . (2018). [Patent CN108991005A]. Application of the graphene oxide in the prevention and treatment of crop phytophthora root rot. https://patents.google.com/patent/CN108991005A/en
3. Elabbadi, A .; Turpin, M .; Gerotziafas, GT; Teulier, M .; Voiriot, G .; Fartoukh, M. (2021). Bacterial coinfection in critically ill COVID-19 patients with severe pneumonia. Infection, 49 (3), pp. 559-562. https://doi.org/10.1007/s15010-020-01553-x
4. Ferner, RE; Aronson, JK (2020). Chloroquine and hydroxychloroquine in covid-19. 369, m1432. https://doi.org/10.1136/bmj.m1432

18. Rawson, TM; Moore, LS; Zhu, N .; Ranganathan, N .; Skolimowska, K .; Gilchrist, M .; Holmes, A. (2020). Bacterial and fungal coinfection in individuals with coronavirus: a rapid review to support COVID-19 antimicrobial prescribing. Clinical Infectious Diseases, 71 (9), pp. 2459-2468. https://doi.org/10.1093/cid/ciaa530
19. Sahraei, Z .; Shabani, M .; Shokouhi, S .; Saffaei, A. (2020). Aminoquinolines against coronavirus disease 2019 (COVID-19): chloroquine or hydroxychloroquine. Int J Antimicrob Agents, 55 (4), 105945. https://doi.org/10.1016/j.ijantimicag.2020.105945
20. Valenzuela-Molina, LC; Arrambí-Díaz, C .; Morales-Barraza, JA; Ramírez-Campaña, JC (2020). Acute respiratory distress syndrome in a patient with COVID-19. Critical Medicine, 34 (4), pp. 249-253. https://dx.doi.org/10.35366/95881
21. Wang, X .; Pei, Y .; Lu, M .; Lu, X .; Du, X. (2015). Highly efficient adsorption of heavy metals from wastewaters by graphene oxide-ordered mesoporous silica materials. Journal of Materials Science, 50 (5), pp. 2113-2121. https://doi.org/10.1007/s10853-014-8773-3
22. Zhang, M .; Gao, B .; Chen, J .; Li, Y .; Creamer, AE; Chen, H. (2014). Slow-release fertilizer encapsulated by graphene oxide films. Chemical Engineering Journal, 255, pp. 107-113. https://doi.org/10.1016/j.cej.2014.06.023

6. Fraud, S .; Poole, K. (2011). Oxidative Stress Induction of the MexXY Multidrug Efflux Genes and Promotion of Aminoglycoside Resistance Development in Pseudomonas aeruginosa. Antimicrobial agents and chemotherapy, 55 (3), pp. 1068-1074. https://doi.org/10.1128/AAC.01495-10
7. Gurunathan, S .; Han, JW; Dayem, AA; Eppakayala, V .; Kim, JH (2012). Oxidative stress-mediated antibacterial activity of graphene oxide and reduced graphene oxide in Pseudomonas aeruginosa. International Journal of Nanomedicine, 7, 5901. https://dx.doi.org/10.2147%2FIJN.S37397
8. He, F .; Xia, X .; Nie, D .; Yang, H .; Jiang, Y .; Huo, X .; Lv, J. (2020). Respiratory bacterial pathogen spectrum among COVID-19 infected and non-COVID-19 virus infected pneumonia patients. Diagnostic microbiology and infectious disease, 98 (4), 115199. https://doi.org/10.1016/j.diagmicrobio.2020.115199
9. Hughes, S .; Troise, O .; Donaldson, H .; Mughal, N .; Moore, LS (2020). Bacterial and fungal coinfection among hospitalized patients with COVID-19: a retrospective cohort study in a UK secondary-care setting. Clinical Microbiology and Infection, 26 (10), pp. 1395-1399. https://doi.org/10.1016/j.cmi.2020.06.025
10. JankauskaitĿ, V .; VitkauskienĿ, A .; Lazauskas, A .; Baltrusaitis, J .; ProsyĿevas, I .; AndruleviĿius, M. (2016). Bactericidal effect of graphene oxide / Cu / Ag nano-derivatives against Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumoniae, Staphylococcus aureus and Staphylococcus aureus resistant to methicillin. International Journal of Pharmacy, 511 (1), pp. 90-97. https://doi.org/10.1016/j.ijpharm.2016.06.121
11. Karaky, N .; Kirby, A .; McBain, AJ; Butler, JA; El-Mohtadi, M .; Banks, CE; Whitehead, KA (2020). Metal ions and graphene-based compounds as alternative treatment options for burn wounds infected by antibiotic-resistant. Archives of Microbiology volume, 202 (5), pp. 995-1004. https://doi.org/10.1007/s00203-019-01803-z
12. Lansbury, L .; Lim, B .; Baskaran, V .; Lim, WS (2020). Co-infections in people with COVID-19: a systematic review and meta-analysis. Journal of Infection, 81 (2), pp. 266-275. https://doi.org/10.1016/j.jinf.2020.05.046
13. Mayayo-Vicente, S .; Salvanés, FR; Gallego-Arenas, A .; Sánchez-Gómez, LM; Ruiz-López, M .; Garcia, BS; Novella-Arribas, B. (2020). Pharmacological treatment in times of uncertainty: use of hydroxychloroquine / chloroquine in the treatment of COVID-19. Family medicine. SEMERGEN, 46, pp. 20-27. https://doi.org/10.1016/j.semerg.2020.06.016
14. Meo, SA; Klonoff, DC; Akram, J. (2020). Efficacy of chloroquine and hydroxychloroquine in the treatment of COVID-19. Eur Rev Med Pharmacol Sci, 24 (8), pp. 4539-4547. https://www.talkingaboutthescience.com/studies/HCQ/Meo2020.pdf
15. Nadres, ET; Fan, J .; Rodrigues, DF (2016). Toxicity and environmental applications of graphene-based nanomaterials. In Graphene-based Materials in Health and Environment (pp. 323-356). Springer, Cham. https://doi.org/10.1007/978-3-319-45639-3_1
16. Perez, LRR, Carniel, E .; Narvaez, GA (2021). Emergence of NDM-producing Pseudomonas aeruginosa among hospitalized patients and impact on antimicrobial therapy during the coronavirus disease 2019 (COVID-19) pandemic. Infection Control & Hospital Epidemiology, pp. 1-3. https://doi.org/10.1017/ice.2021.253
17. Pimentel, J .; Andersson, N. (2020). Chloroquine and its derivatives in the management of COVID-19: an exploratory systematic review. Biomédica, 40 (Suppl 2), 80. https://dx.doi.org/10.7705%2Fbiomedica.5478