

News

Core-shell structured polyethylene glycol functionalized graphene for energy-storage polymer dielectrics: Combined mechanical and dielectric performances



SEPTEMBER 1, 2020

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PEGs

+

Monodispersed PEGs

+

Intermediates of Anti-diabetic

+

Drug

Pharmaceutical Excipients

+

Graphene, as the thinnest, strongest and stiffest material and arranged in a honeycomb pattern structure with sp²-hybridized carbon, finds more potential applications in modern industry than other carbonaceous allotropes; in pristine form, it is also an excellent heat and electric conductor. However, the major obstacle in utilizing graphene, particularly for electronic applications, is its insolubility in the fully reduced state due to the strong affinity between the graphene sheets.

In the present study, they synthesized for the first time a polydispersed graphene with desirable electric conductivity by covalent functionalization with single terminal aminated polyethylene glycol monomethyl ether (PEG-NH₂). The PEG-NH₂ grafted graphene (PEG@GO) was then reduced by hydrazine hydrate to PEG@rGO and subsequently incorporated into epoxy resin by a solution mixing method. The PEG@rGO with a "core-shell" structure exhibited homogeneous dispersion in epoxy and also effectively reduced the dielectric loss, hence contributing excellent dielectric properties and mechanical strength to the final PEG@rGO/epoxy nanocomposites.

SINOPEG is a dynamic science company dedicated to drug delivery systems (DDS). As a leading company in polyethylene glycol derivatives (PEGs), we are also specialized in the R&D of long acting biopharmaceuticals, developing and manufacturing of block copolymers, lipids for drug delivery, medical devices, bio-engineering, and other broad uses.

Products

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SINOPEG provides high quality poly(ethylene glycol) derivatives, more varieties of chain structure, rich selection of functional groups, high reactivity, site functionalization ratio.

[0249] As used herein, a "lipid nanoparticle" is a composition comprising one or more lipids. Lipid nanoparticles are typically sized on the order of micrometers or smaller and may

[0252] As used herein, a "PEG lipid" or "PEGylated lipid" refers to a lipid comprising a polyethyleneglycol component.

[0254] The phrase “pharmaceutically acceptable excipient,” as used herein, refers to any

dihydrate), a polymer (e.g., polyethylene glycol 200 (PEG 200), PEG 400, PEG 600, PEG 1000, PEG 3350, PEG 4000, PEG 8000, PEG 10000, PEG 20000, polyethylene glycol monomethyl ether 550 (mPEG 550), mPEG 600, mPEG 2000, mPEG 3350, mPEG 4000,

MODERNA/NIH WIPO
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Categorías

New Products

1,2-Distearoyl-sn-glycero-3-

(14-
hydroxybutyl) azanedi-

Sodium B (12)-
hydroxybenzamide

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Products

COVID-19 Vaccine Excipients 2-[(polyethylene glycol)-2000] N,N-ditetradecylacetamide[ALC-0159] CAS: 1849616-42-7

2-[(polyethylene glycol)2000]N,N-ditetradecylacetamide1,2-distearoylsn-glycero-3-phosphocholine, and cholesterol

Categories

- PEGs +
- Monodispersed PEGs +
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- COVID-19 Vaccine Excipients -
- Cosmetic +

New Products

Polyethylene glycol (PEG) 2000

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Product Details

Methoxypoly(ethylene glycol) ditetradecylacetamide

2-[(polyethylene glycol)-2000] N,N-ditetradecylacetamide [ALC-0159] CAS: 1849616-42-7

ALC-0159

Chinese Name: 2-[(聚乙二醇)-2000] N,N-二硬脂酰基-1,3-甘油磷酸胆碱

Chinese Name: 2-[(聚乙二醇)-2000] N,N-二硬脂酰基-1,3-甘油磷酸胆碱

Abbreviation: ALC-0159, APEG-0159

CAS: 1849616-42-7

Package Size: 1g, 5g, 10g, 25g, 50g, 100g, 250g, 500g, 1kg

Storage: Store at 20-25°C (68-77°F)

Stability: Stable

Item No.: ALC-0159

Inquiry Now

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Pfizer/BioNTech BNT162b PEGs: ALC-0315 and ALC-0159

MIFIGHT



Medicines & Healthcare products
Regulatory Agency



Public Assessment Report

Authorisation for Temporary Supply

COVID-19 mRNA Vaccine BNT162b2 (BNT162b2 RNA)

concentrate for solution for injection

Department of Health and Social Care (DHSC)
Pfizer Limited & BioNTech Manufacturing
GmbH

PAR COVID-19 mRNA Vaccine BNT162

A condition of authorisation under this regulation is that the manufacturer will provide further data on the drug product manufacturing process as it is scaled up.

Excipients

The excipients sucrose, sodium chloride, potassium chloride, dibasic sodium phosphate dihydrate, monobasic potassium phosphate and water for injection are all of Ph. Eur. grades, which are acceptable.

In addition to those excipients, the vaccine contains four lipids, of which two are used in approved medicinal products (cholesterol and 1,2-distearoyl-sn-glycero-3-phosphocholine, hereafter termed DSPC) and two are considered novel in that they have not been used in an authorised medicinal product in the UK.

ALC-0315 ((4-hydroxybutyl)aziradyl)bis(hexano-6,1-diol)bis(2-hexyldesanoate)) and ALC-0159 C-1((polyethylene glycol)-2000)-N,N-ditetradecylacetamide)

The lipids are intended to encapsulate the mRNA in the form of a lipid nanoparticle to aid cell entry and stability of the RNA lipid nanoparticles.

ALC-0315 is the functional cationic lipid component of the drug product. When incorporated in lipid nanoparticles, it helps regulate the endosomal release of the RNA. During drug product manufacturing, introduction of an aqueous RNA solution to an ethanolic lipid mixture containing ALC-0315 at a specific pH leads to an electrostatic interaction between the negatively charged RNA backbone and the positively charged cationic lipid. This electrostatic interaction leads to encapsulation of RNA drug substance resulting with particle formation. Once the lipid nanoparticle is taken up by the cell, the low pH of the endosome renders the LNP fusogenic and allows the release of the RNA into the cytosol.

The primary function of the PEGylated lipid ALC-0159 is to form a protective hydrophilic layer that sterically stabilises the LNP which contributes to storage stability and reduces non-specific binding to proteins. As higher PEG content can reduce cellular uptake and interaction with the endosomal membrane, PEG content is controlled.

What's in Pfizer BNT162b and COVID-19 Injections?

M|FIGHT

PFE EUA #27034, Nov 20, 2020, pg. 11

Sec. 3. Pfizer/BioNTech COVID19 Vaccine (BNT162b)

3.1 Vaccine Composition, Design Regimen

The vaccine contains a nucleoside -modified messenger RNA (modRNA) encoding the viral spike glycoprotein (S) of SARS-CoV-2. The vaccine also includes the following ingredients: lipids (4 - hydroxybutyl)azanediy) bis (hexane -6, 1-diyl)bis(2-hexyldecanoate), 2-[(polyethylene glycol)-2000]-N,N-ditetradecylacetamide, 1,2-distearoyl-sn- glycleo-3-phosphocholine, and cholesterol), potassium chloride, monobasic potassium phosphate, sodium chloride, dibasic sodium phosphate dihydrate, and sucrose.

Two (2) PEGylated Lipids in
Pfizer BNT162b2
ALC -0135 | ALC -0159

Emergency Use Authorization (EUA) for an Unapproved Product Review Memorandum

Identifying Information

Application Type	EUA (Event-driven EUA request)
Application Number	27034
Sponsor	Pfizer Inc. on behalf of Pfizer and BioNTech
Submission Date	November 20, 2020
Receipt Date	November 20, 2020
Signatory Authority	Marion F. Goulet, Ph.D., Director, CBER/OVRR
Review Team	Ramachandra Naik, Ph.D., Chair, OVRR/OVRRPA CAPT Michael Smith, Ph.D., Regulatory Project Manager, OVRR/OVRRPA Susan Woloshin, M.D., Clinical reviewer, OVRR/OVRRPA Natalie Al-Humadi, Ph.D., Toxicology reviewer, OVRR/OVRRPA Lei Huang, Ph.D., Biostatistics reviewer, OBE/DB Naruhiko Murata, Ph.D., CMC Product reviewer, OVRR/OVRRPA Xiao Wang, Ph.D., CMC Product reviewer, OVRR/OVRRPA Laura Fortan, Ph.D., CMC Facility reviewer, OCBQ/DMFQ Kathleen Jones, Ph.D., CMC Facility reviewer, OCBQ/DMFQ Kerry Walsh, M.D., Pharmacovigilance reviewer, OBE/DE Narayan Naar, M.D., Pharmacovigilance reviewer, OBE/DE Brenda Baldwin, Ph.D., Data Integrity reviewer, OVRR/OVRRPA Bhramathi Kannan, Ph.D., BIMO reviewer, OCBQ/DB/BI Chuchi Elekwachi, Ph.D., Labeling reviewer, OCBQ/DCMI/APLB December 11, 2020
Review Completion Date	December 11, 2020
Established Name/Other names used during development	Pfizer-BioNTech COVID-19 Vaccine, BNT 162b2
Dosage Form/Strengths and Route of Administration	A 0.3 mL Suspension for intramuscular injection
Intended Use for EUA	Active immunization to prevent coronavirus disease 2019 (COVID-19) caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)
Intended Population	Individuals 16 years of age and older

<https://www.fda.gov/media/144416/download>

Global Patent for 2019-nCoV Vaccines' Graphene Lipid Nanotechnology

Nano coronavirus recombinant vaccine taking graphene oxide as

Description

Abstract

The invention belongs to the field of nano materials and biomedicine, and relates to a vaccine, in particular to development of 2019-nCoV coronavirus nuclear recombinant nano vaccine. The invention also comprises a preparation method of the vaccine and application of the vaccine in animal experiments. The new corona vaccine contains graphene oxide, camosine, CpG and new corona virus RBD binding camosine, CpG and neocoronavirus RBD on the backbone of graphene oxide, the CpG coding sequence is shown as SEQ ID NO. 1, the novel coronavirus RBD refers to a novel coronavirus protein receptor binding region which can generate a high-titer specific antibody aiming at the RBD in a mouse body and provides a strong support for prevention and treatment of the novel coronavirus.



U.S. & Global Pharma & Biotech leaders meeting of Shanghai National Engineering Research Center for Nanotech To Collaborate on Global COVID-19 Vaccines

Nano coronavirus recombinant vaccine taking graphene oxide as carrier

Technical Field

The invention belongs to the field of nano materials and biomedicine, and relates to development of a vaccine development platform. In particular to the development of 2019-nCoV coronavirus nuclear recombinant nano vaccine. The invention also includes the use of the vaccine in animal testing

Technical Field

The vaccine is an ultimate weapon for eliminating major infectious diseases, has the advantages of lowest cost and more advantages of prior enemy than other therapies, undoubtedly becomes hopeful to the public, the smallpox is eliminated by human beings through vaccination, the poliomyelitis cases are reduced by 99 percent, the infectious diseases such as diphtheria are rare, and the incidence rate of diseases such as measles, neonatal tetanus and the like is remarkably reduced. The effect of vaccines on human health is not excessive, and the birth of each new vaccine is a great victory for human beings to overcome an infectious disease! To date, no medical treatment has been able to have such an important, lasting and profound effect on human health as a vaccine, nor is any therapeutic available to eliminate a disease from the earth at the very least cost of a vaccine.

CN112220919A

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Other languages: Chinese
Inventor: 王 强, 王 强, 王 强, 王 强, 王 强, 王 强
Current Assignee:

Wordwide applications
2020 CN
Application CN202011021367.1A events 0
2020-09-27 * Application filed in Shanghai National Engineering Research Center for Nanotechnology (CN) Ltd.
2020-09-27 * Priority to CN202011021367.1A
2021-01-15 * Publication of CN112220919A
Status: Pending

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