

INFORME DE BÚSQUEDA DE PATENTES				
N° de solicitud: NC20170011422				
CRITERIOS PARA LA BÚSQUEDA (anexar pantallazo o reporte en PDF, junto con los boléanos utilizados**)				
Palabras clave utilizadas		an amphiphilic polymeric material; a hydrophilic polymer conjugated to a hypoxia-sensitive hydrophobic group; a diabetes treatment agent; Insulin; a glucose oxidizing agent.		
CLASIFICACIONES UTILIZADAS PARA LA BÚSQUEDA		CIP: A61K 9/50, A61K 9/51, A61K 31/00, A61K 31/04, A61K 38/28, A61K 38/43, A61K 38/44. CPC (Opcional):		
DOCUMENTOS CONSIDERADOS RELEVANTES (documentos patentes, literatura no patente, etc...)				
Informes/Base de datos	N° de solicitud/Autor*	Fecha de Publicación/Presentación (DD/MM/AAAA)	Reiv. afectadas (con indicación, si procede, de las partes relevantes)	Categoría especiales de los documentos citados**
ORBIT; ESPACENET, EPOQUENET.	US2008102114	01/Mayo/2008	1 a 10 NIVEL INVENTIVO	Y
	THAMBI, T et al.	26/Noviembre/2013	1 a 10 NIVEL INVENTIVO	Y
	WO2007075388	05/Julio/2007	No afecta	A
** Categorías especiales de documentos citados:				
“A” documento que define el estado general de la técnica no considerado como particularmente relevante. “E” solicitud de patente o patente anterior pero publicada en la fecha de presentación internacional o en fecha posterior. “P” documento publicado antes de la fecha de presentación internacional pero con posterioridad a la fecha de prioridad reivindicada.		“X” documento particularmente relevante; la invención reivindicada no puede considerarse nueva o que implique una actividad inventiva por referencia al documento aisladamente considerado. “Y” documento particularmente relevante; la invención reivindicada no puede considerarse que implique una actividad inventiva cuando el documento se asocia a otro u otros documentos de la misma naturaleza, cuya combinación resulta evidente para un experto en la materia.		

Literatura no patente *Se incluye entre otros, toda la referencia de la literatura no patente.	--
Fecha del reporte de búsqueda:	05/12/2018

ORBIT

Erase all Save entire strategy Create a script Export					
Menu Explorer << Patent family searches (FamPat)					
Searches Easy search Advanced search Semantic search Assignee search Number search Mv session	Search Step	Result(s)	Query	Assistant	Source
	4	1	1 AND 2 AND 3	Search history	FAMPAT
	3	4	A DIABETES TREATMENT AGENT	Search history	FAMPAT
	2	68	(HYDROPHILIC AND POLYMER AND CONJUGATED AND HYPOXIA_SENSITIVE AND HYDROPHOBIC AND GROUP)/TX/BI/SA/KEYV/IN/PA	Easy search	FAMPAT
	1	9211	(AMPHIPHILIC AND POLYMERIC AND MATERIAL)/BI/SA/KEYV/IN/PA	Easy search	FAMPAT
Show results Modify Save Alert Delete					

Easy search

Menu Filter Explorer

1 results for 1 AND 2 AND 3 - Collection: FAMPAT

Filter options

1st application year

After 2015 (1)

2011-2015 (0)

2006-2010 (0)

2001-2005 (0)

Before 2001 (0)

Assignee

NORTH CAROLINA STATE UNIVERSITY (1)

Litigations

Oppositions

IPC classification

US classification

TI

Glucose-responsive insulin delivery system using hyoxia-sensitive nanocomposites

CA2983289

2016-04-21

2016-1

Family grouping

Display

PC

Glucose-responsive insulin delivery system using hyoxia-sensitive nanocomposites

GLUCOSE

SELF-ASSEMBLY

GRV

REDUCTION

REL

HYDROPHOBIC

HYDROPHILIC

[GLUCOSE]

[O₂]

REDUCTION

HS-HA

INSULIN

GLUCOSE OXIDASE (GOx)

HYALURONIC ACID (HA)

2-NITROIMIDAZOLE (NI)

2-AMINOIMIDAZOLE

A closed-loop insulin delivery system is described. More particularly, the presently disclosed insulin delivery system can comprise glucose-responsive vesicles that release insulin in response to hypoxia triggered by enzymatic reduction of glucose. In addition or as an alternative to insulin, the delivery system can release other diabetes treatment agents, such as non-insulin-based diabetes treatment agents. The vesicles can be prepared from a hypoxia sensitive polymer, such as a hypoxia-sensitive hyaluronic acid (HS-HA). The HS-HA can comprise hydrophobic groups that can be reduced in hypoxic environments to form hydrophilic groups. The vesicles can be loaded into microneedles and microneedle array patches for use in the treatment of diabetes or to otherwise regulate blood glucose levels in subjects in need of such treatment.

ESPAENET

Cited in	International search	[Y]* US2008102114 (KORITALA PANDURANGA RAO [US], et al) [Y] 1-2, 3/1-2, 14-15, 16/14-15 *; abstract; paragraphs [0015], [0029]-[0030], [0041], [0132], [0138] *;
		[Y]* WO2007075388 (CELL MEDICAL INC X [US], et al) [Y] 15, 16/15 *; page 4, lines 27-30 *;
		[A]* US2015030641 (ANDERSON DANIEL G [US], et al) [A] 1-2, 3/1-2, 14-15, 16/14-15 *; Entire Document *;
		[Y] - THAMBI, T et al., "Hypoxia-responsive polymeric nanoparticles for tumor-targeted drug delivery.", Biomaterials, (20131126), vol. 35, pages 1735 - 1743, XP055251593 [Y] 1-2, 3/1-2, 14-15, 16/14-15 *; abstract; page 1739, column 2, first paragraph; page 1740, column 1, first paragraph *
		DOI: http://dx.doi.org/10.1016/j.biomaterials.2013.11.022
		[XP] - YU, J et al., "Microneedle-array patches loaded with hypoxia-sensitive vesicles provide fast glucose-responsive insulin delivery.", PNAS., (20150707), vol. 112, no. 27., pages 8260 - 8265, XP055324722 [X,P] 1, 14 * Entire document *
		DOI: http://dx.doi.org/10.1073/pnas.1505405112

EPOQUENET



New connection on: : 05-12-2018 : 16:04:04 - Last disconnection on: : 04-12-2018 : 19:13:58

V 4.0.0.44803(LP,U,linux) (Rev:43856 2017-04-27 09:03:29 +0200#(D201820)) (RPM D201820)

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Database: EPODOC

Records: 111.652.466

Terms: 1.478.499.882

Occurrences: 22.602.575.931

Last Update: 20181205

[EPODOC: SS 1] amphiphilic AND polymeric AND material

Results in EPODOC **131**

[SS 2] diabetes AND treatment AND agent

Results in EPODOC **2.242**

[SS 3] 1 AND 2

Results in EPODOC **1**

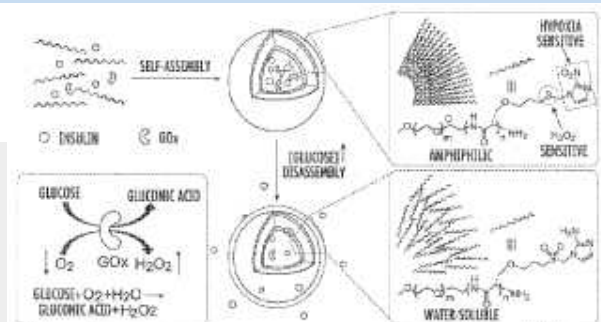
[SS 4] ..li ti ab pn



1/1 © EPODOC / EPO

TI - PATCH LOADED WITH DUAL-SENSITIVE VESICLES FOR ENHANCED GLUCOSE-RESPONSIVE INSULIN DELIVERY

AB - A composition comprising an **amphiphilic polymeric material** that is both hydrogen peroxide- and hypoxia-sensitive is described. The composition can further include a glucose-oxidizing enzyme and



insulin, a bioactive derivative thereof, and/or another therapeutic **agent** (e.g., another **diabetes treatment agent**).

The **polymeric material** can form vesicles that comprise single or multiple layers of the **polymeric material** that enclose the glucose-oxidizing enzyme and the insulin, bioactive derivative and/or other therapeutic **agent**. The vesicles can be loaded into microneedles to, for example, prepare microneedle arrays for skin patches. Methods of delivering insulin to a subject using the compositions, vesicles, microneedles, and/or microneedle array skin patches are also described.

PN - [WO2018085809](#) A1 20180511

[SS 4]