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(54) Title: BIODEGRADABLE BIOADHESIVE CONTROLLED RELEASE SYSTEM OF NANO-PARTICLES FOR ORAL CARE PRODUCTS

(57) Abstract: The present invention relates to a controlled release system useful for site specific delivery of biologically active ingredients or sensory markers, over an extended period of time, targeting biological surfaces comprising the oral cavity and mucous membranes of various tissues, as well as the controlled release of the biological active ingredients or sensory markers. The controlled release system of the present invention is a nano-particle, having an average particle diameter of from about 0.01 microns to about 10 microns, which comprises a biodegradable solid hydrophobic core and a bioadhesive/mucoadhesive positively charged surface. The invention also relates to the use of the nano-particles of the present invention in consumer only hygiene products, such as toothpaste or mouthwash, for treatment and prevention of periodontal disease. The nano-particles of the present invention are particularly effective for targeted controlled delivery of biological active ingredients into the periodontal pocket. The present invention also provides synchronizing the release of the biologically active ingredient with that of the sensory markers to convey to the consumer the product performance and signal that a new application of the product is needed.

INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 9/50; B32B 27/02, 5/16; B01J 13/02
US CL : 424/501, 502; 428/402.21; 264/4.33, 4.4
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/501, 502; 428/402.21; 264/4.33, 4.4

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,565,188 A (WONG et al) 15 October 1996, see Abstract; columns 1-5; column 12, lines 57-64; column 14, lines 26-29.	1,2,4,7, 10-14
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A		3,5,6,8,9, 15-38

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Z" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

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