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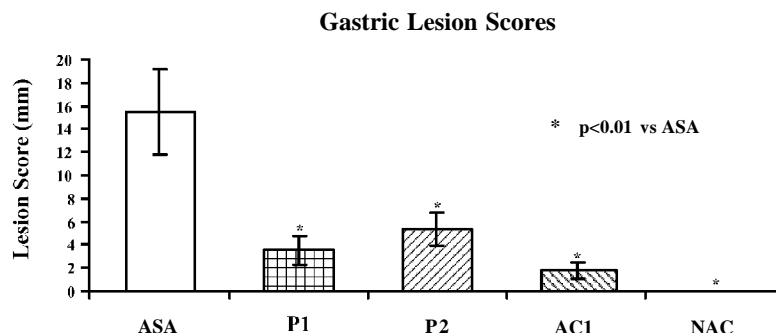
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(54) Title: pH DEPENDENT CARRIERS FOR TARGETED RELEASE OF PHARMACEUTICALS ALONG THE GASTROINTESTINAL TRACT, COMPOSITIONS THEREFROM, AND MAKING AND USING SAME

**FIG. 12**

(57) Abstract: Novel drug carriers capable of targeted and/or pH dependent release of biologically active agents into selected pH environments including the gastrointestinal (GI), ophthalmic, urinary, or reproductive tracts. Unexpectedly, carriers including free fatty acids (FFA) are able to deliver biologically active agents to various pH environments. Such targeted delivery is tailorable and useful for active agents that are: (a) injurious to the upper GI tract (esophagus, stomach, and duodenum), (b) acid labile, (c) impermeable/insoluble compounds in GI fluids, (d) susceptible to first pass metabolism, and/or (e) cause stomach irritation, upset, or dyspepsia.



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## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2012/058163****A. CLASSIFICATION OF SUBJECT MATTER****A61K 9/10(2006.01)i, A61K 9/16(2006.01)1, A61K 9/14(2006.01)1, A61P 1/04(2006.01)1, A61P 1/00(2006.01)1**

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)

A61K 9/10; A61K 9/14; A61K 9/52; A61K 9/26

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; keywords: pH dependent, pH sensitive, carrier, fatty acid, NSAID, non-steroidal anti-inflammatory, gastric, intestinal, gastrointestinal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004-0109894 A1 (SHEFER, A. et al.) 10 June 2004 See pages 9 and 10; and claims 1, 11, 17, 18, 20-22, and 33-37.	1-19, 21-23
X	CHANG, C.-M. et al. "Effect of dissolution media and additives on the drug release from cubic phase delivery systems" Journal of Controlled Release, 1997, Vol. 46, pp. 215-222.	1, 2, 4, 11-16, 18, 19, 21-23
A	See abstract; and pp. 216-218 and 221.	3, 5-10, 17
X	HAZEMOTO, N. et al. "pH-sensitive liposomes composed of phosphatidyl-ethanolamine and fatty acid" Chem. Pharm. Bull., 1990, Vol. 38, No. 3, pp. 748-751.	1, 4
A	See abstract and p. 748.	2, 3, 5-19, 21-23
X	US 2008-0260819 A1 (FLEMING, A. B. et al.) 23 October 2008 See p. 7 and claims 1-12.	1, 2, 4, 11-14, 18, 19, 21-23
A		3, 5-10, 15-17



Further documents are listed in the continuation of Box C.



See patent family annex.

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"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

"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

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PHOEUNG, T. et al. "pH-triggered release from nonphospholipid LUVs modulated by the pKa of the included fatty acid" Langmuir, 2010, Vol. 26, No. 15, pp. 12769-12776.	1,4
A	See abstract and p. 12770.	2,3,5-19,21-23

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