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(54) Title: DIAGNOSTIC DEVICE AND METHOD FOR SENSING HYDRATION STATE OF A MAMMALIAN SUBJECT

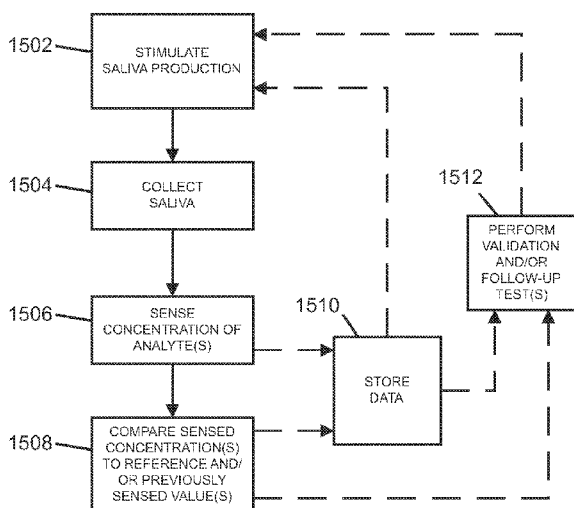


FIG. 15

(57) Abstract: Timed sensing of collection of saliva in a liquid collection element of predetermined volumetric capacity may be used to determine salivary secretion rate as indicative of state of euhydration or dehydration. Sensing of salivary flow rate may be further augmented by sensing concentration of at least one analyte in saliva (e.g., with an immunochromatographic assay performed in a lateral flow device) in order to determine a state of euhydration or dehydration. Production of saliva may be stimulated, and collected saliva may be analyzed to generate an analyte detection signal that indicative of presence and/or correlative of concentration of at least one analyte in the collected saliva to sense a state of euhydration or dehydration.



A. CLASSIFICATION OF SUBJECT MATTER*G01N 33/52(2006.01)i, G01N 33/487(2006.01)i, G01N 27/26(2006.01)i, G01N 33/15(2006.01)i*

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)

G01N 33/52; G01N 1/28; A61K 49/00; G01N 33/487; B01L 3/00; G01N 33/68; A61B 5/00; C12Q 1/24

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) & Keywords: saliva(oral liquid), hydration, secretion, electrode, assay, stimulating, and absorbent

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007-0116597 A1 (MINK, RONALD W. et al.) 24 May 2007 See abstract; paragraphs 93-108; claims 1,24; figs. 1-4.	1-38
A	US 2008-0177166 A1 (PRONOVOST, ALLAN D. et al.) 24 July 2008 See abstract; paragraphs 55-65; claims 1,27; figs. 1-5.	1-38
A	US 2007-0048224 A1 (HOWELL THOMAS A. et al.) 01 March 2007 See abstract; paragraphs 85-95; claim 1; figs. 8A-8B.	1-38
A	US 2008-0274495 A1 (JUMONVILLE, JULIE KEMP et al.) 06 November 2008 See abstract; paragraphs 139-143; claims 1,4-5; figs. 1-5.	1-38
A	US 2010-0174156 A1 (PATEL, SOHITA et al.) 08 July 2010 See abstract; paragraphs 29-30; claims 1-10.	1-38
PA	US 2010-0330684 A1 (O'CONNOR, STEPHEN D.) 30 December 2010 See abstract; paragraphs 74-79; claims 1,18; figs. 7A-7B.	1-38

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

* Special categories of cited documents:

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007-0116597 A1	24.05.2007	AU 1999-32190 A1	18.10.1999
		CA 2326392 A1	07.10.1999
		EP 1086372 A1	28.03.2001
		EP 1086372 A4	18.09.2002
		EP 1086372 B1	31.05.2006
		EP 1696236 A2	30.08.2006
		EP 1696236 A3	20.09.2006
		EP 1696236 A8	02.06.2010
		JP 04623536 B2	12.11.2010
		JP 2002-510048 A	02.04.2002
		US 2002-0155029 A1	24.10.2002
		US 2002-0192839 A1	19.12.2002
		US 2009-0170072 A1	02.07.2009
		US 2010-0239458 A1	23.09.2010
		US 6303081 B1	16.10.2001
		US 7192555 B2	20.03.2007
		US 7541194 B2	02.06.2009
US 8062908 B2	22.11.2011		
WO 99-50656 A1	07.10.1999		
US 2008-0177166 A1	24.07.2008	EP 2121968 A1	25.11.2009
		WO 2008-088357 A1	24.07.2008
US 2007-0048224 A1	01.03.2007	US 2006-0231109 A1	19.10.2006
		US 2006-0241355 A1	26.10.2006
		US 2006-0248946 A1	09.11.2006
		US 2007-0024465 A1	01.02.2007
		US 2007-0225578 A1	27.09.2007
		US 8112293 B2	07.02.2012
		US 8118740 B2	21.02.2012
US 2008-0274495 A1	06.11.2008	AU 2008-247479 A1	13.11.2008
		EP 2153225 A1	17.02.2010
		US 2008-274014 A1	06.11.2008
		WO 2008-137749 A1	13.11.2008
US 2010-0174156 A1	08.07.2010	None	
US 2010-0330684 A1	30.12.2010	WO 2010-090810 A2	12.08.2010
		WO 2010-090810 A3	25.11.2010