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(54) **CO-AMORPHOUS FORMS OF BETA-LACTOGLOBULIN AND A DRUG SUBSTANCE**

(57) The present invention relates to co-amorphous forms of a drug substance and a protein, more particularly beta-lactoglobulin, wherein the purity of the beta-lactoglobulin is at least 94% (w/w) of the total amount of

protein comprised in the co-amorphous form. The present invention also relates to compositions, such as pharmaceutical compositions, comprising the co-amorphous form.

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EUROPEAN SEARCH REPORT

Application Number  
EP 24 17 8410

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	THOMAS MARIE ET AL: "-lactoglobulin interactions during storage", DAIRY SCIENCE AND TECHNOLOGY (LE LAIT), vol. 85, no. 4-5, 1 July 2005 (2005-07-01), pages 325-333, XP055777935, PARIS, FR ISSN: 0023-7302, DOI: 10.1051/lait:2005013	1,3,4,8,9,12-14	INV. A61K9/14 A61K9/16
Y	* page 326, left-hand column, last paragraph - right-hand column, paragraph 2; figure 3 *	7	
T	LE MAUX SOLÈNE ET AL: "[beta]-Lactoglobulin-linoleate complexes: In vitro digestion and the role of protein in fatty acid uptake", JOURNAL OF DAIRY SCIENCE, vol. 96, no. 7, 1 July 2013 (2013-07-01), pages 4258-4268, XP055777934, US ISSN: 0022-0302, DOI: 10.3168/jds.2013-6682	1	
	* page 4259, left-hand column, paragraph 4 *		TECHNICAL FIELDS SEARCHED (IPC) A61K
Y,D	WO 2018/113890 A1 (UNIV COPENHAGEN [DK]) 28 June 2018 (2018-06-28)	7	
A	* page 1, lines 26-31 * * page 4, paragraph 1 * * page 4, line 35 * * page 20, lines 15-24 * * example 1 *	2,10,11	
----- -/--			
The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>28 August 2024</b>	Examiner <b>Schwald, Claudia</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

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Application Number  
EP 24 17 8410

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	<p>Leitlinie Gemeinsame ET AL:                      "S2k-Leitlinie Chronische Obstipation:                      Definition, Pathophysiologie, Diagnostik                      und Therapie",                      ,                      28 February 2013 (2013-02-28),                      XP055854688,                      Retrieved from the Internet:                      URL:https://www.awmf.org/uploads/tx_szleit                      linien/021-0191_S2k_Chronische_Obstipation                      _2013-06-abgelaufen.pdf                      [retrieved on 2021-10-25]                      * page 26, paragraph 5-3 *</p>	1-14	
X	<p>Thomas Marie E.C.: "Influence de                      l'activite de l'eau sur les interactions                      lactose et betalactoglobuline de poudres                      laitiers",                      ,                      7 October 2004 (2004-10-07), XP055854730,                      Retrieved from the Internet:                      URL:https://hal.univ-lorraine.fr/tel-01749                      756v1                      [retrieved on 2021-10-25]                      * page 57, paragraph 1.1 *                      * page 59, paragraph 2 *                      * page 59, paragraph I.2.1 *</p>	1,3-6,8, 9,12-14	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
Place of search <b>The Hague</b>		Date of completion of the search <b>28 August 2024</b>	Examiner <b>Schwald, Claudia</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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28 - 08 - 2024

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
	WO 2018113890 A1	28-06-2018	CA 3046879 A1	28-06-2018
			CN 110099696 A	06-08-2019
15			EP 3558382 A1	30-10-2019
			JP 7511222 B2	05-07-2024
			JP 2020502086 A	23-01-2020
			JP 2023016841 A	02-02-2023
			KR 20190099455 A	27-08-2019
20			US 2019307886 A1	10-10-2019
			US 2024000945 A1	04-01-2024
			WO 2018113890 A1	28-06-2018
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