EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR HEALTH AND FOOD SAFETY

Food and feed safety, innovation
Food processing technologies and novel foods

Brussels, 28 April 2020
(updated July 2024 – see note)

REGISTER OF FOOD ENZYMES TO BE CONSIDERED FOR INCLUSION IN THE UNION LIST

Article 17 of Regulation (EC) No 1332/2008[1] provides for the establishment of a Register of all food enzymes to be considered for inclusion in the Union list.

In accordance with that Article, the Register includes all applications which were submitted within the initial period fixed by that Regulation and which comply with the validity criteria laid down in accordance with Article 9(1) of (EC) No 1331/2008 establishing a common authorisation procedure for food additives, food enzymes and food flavourings[2].

The Register therefore lists all valid food enzyme applications submitted until 11 March 2015 except those withdrawn by the applicant before that date.

Applications submitted after that date are not included in the Register but will be processed in accordance with the Common Authorisation Procedure.

The entry of a food enzyme in the Register specifies the identification, the name, the source of the food enzyme as provided by the applicant and the EFSA question number under which the status of the Authority's assessment can be followed[3].

As defined by Article 3 of Regulation (EC) No 1332/2008, 'food enzyme' subject to an entry in the Register, refers to a product that may contain more than one enzyme capable of catalysing a specific biochemical reaction. In the assessment process, such a food enzyme may be linked with several EFSA question numbers.

The present Register is not a list of authorised food enzymes. The enzymes in the Register are not authorised at Union level and have not necessarily already been evaluated by the Authority. Those enzymes that already have been evaluated by the Authority, did not all get a positive opinion. That does not affect the Register but will be taken into account at the time of adoption of the Union List in accordance with Article 7 of Regulation (EC) No 1331/2008.

[1] Regulation (EC) No 1332/2008 of the European Parliament and of the Council of 16 December 2008 on food enzymes and amending Council Directive 83/417/EEC, Council Regulation (EC) No 1493/1999, Directive 2000/13/EC, Council Directive 2001/112/EC and Regulation (EC) No 258/97 (OJ L 354, 31.12.2008, p.7)

[2] Regulation (EC) No 1331/2008 of the European Parliament and of the Council of 16 December 2008 establishing a common authorisation procedure for food additives, food enzymes and food flavourings (OJ L 354, 31.12.2008, p 1-6)

[3] https://open.efsa.europa.eu/questions

The Union List of food enzymes will be adopted once the Authority has issued an opinion on each food enzyme included in the Register in accordance with the procedure laid down in article 3 of Regulation (EC) No 1331/2008.

Without prejudice to other applicable Union legislation, including Regulation (EC) No 178/2002[4], until the date of application of the Union list of food enzymes, **national provisions in force** concerning the placing on the market and use of food enzymes and food produced with food enzymes **continue to apply in the Member States, in accordance with Article 24 of the Regulation on Food Enzymes**.

As per Article 4 of the Regulation on Food Enzymes, from the date of application of the Union list, only food enzymes included in that list may be placed on the EU market as such and used in foods, in accordance with the specifications and conditions of use provided for in the list.

This Register was prepared by Commission services and does not commit the European Commission. Only the Court of Justice of the European Union is competent to authoritatively interpret Union law.

Note: The Register was updated in July 2024 as regards to the EFSA question numbers given to grouped applications to reflect the individual data submitted by different manufacturers.

[4] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety, *OJ L 31, 1.2.2002, p. 1.*

Commission ID	IUBMB[5] number (EC)	Systematic name	Name of the food enzyme as submitted	Name of the production organism as submitted	Name of the production strain as submitted	EFSA Q Number
2013/19	1.1.3.4	β-D-glucose:oxygen 1-oxidoreductase	Glucose oxidase	Aspergillus niger	ZGL	EFSA-Q-2013-01005
2013/22	1.1.3.4	β-D-glucose:oxygen 1-oxidoreductase	Glucose oxidase	Aspergillus niger	not available	EFSA-Q-2023-00238
2015/151	1.1.3.4	β-D-glucose:oxygen 1-oxidoreductase	Glucose oxidase	Aspergillus niger	NZYM-KA	EFSA-Q-2016-00134
2015/179	1.1.3.4	β-D-glucose:oxygen 1-oxidoreductase	Glucose oxidase	Aspergillus niger	DP-Aze23	EFSA-Q-2016-00144
2013/06	1.1.3.4	β-D-glucose:oxygen 1-oxidoreductase	Glucose oxidase	Aspergillus oryzae	NZYM-KP	EFSA-Q-2013-00687
2015/121	1.1.3.4	β-D-glucose:oxygen 1-oxidoreductase	Glucose oxidase	Penicillium chrysogenum	PGO 19-162	EFSA-Q-2016-00533
2015/47	1.1.3.5	D-hexose:oxygen 1-oxidoreductase	Hexose oxidase	Hansenula polymorpha	DP-Jza21	EFSA-Q-2015-00406
2015/96	1.10.3.2	Benzenediol:oxygen oxidoreductase	Laccase	Trametes hirusta	AE-OR	EFSA-Q-2015-00694
2015/105	1.10.3.3	L-ascorbate:oxygen oxidoreductase	L-Ascorbate oxidase	Cucurbita pepo and Cucurbita moschata	not applicable	EFSA-Q-2015-00825
2015/65	1.11.1.6	Hydrogen-peroxide:hydrogen-peroxide oxidoreductase	Catalase	Aspergillus niger	AE-CN	EFSA-Q-2015-00449
2015/119	1.11.1.6	Hydrogen-peroxide:hydrogen-peroxide oxidoreductase	Catalase	Aspergillus niger	CTS 2093	EFSA-Q-2016-00532
2015/185	1.11.1.6	Hydrogen-peroxide:hydrogen-peroxide oxidoreductase	Catalase	Aspergillus niger	DP-Azw58	EFSA-Q-2016-00274
2015/198	1.11.1.6	Hydrogen-peroxide:hydrogen-peroxide oxidoreductase	Catalase	Extracts of hog (pig) liver	not applicable	EFSA-Q-2017-00406

[5] Identification number of the International Union of Biochemistry and Molecular Biology.

2015/158	1.11.1.6	Hydrogen-peroxide:hydrogen-peroxide oxidoreductase	Catalase	Porcine livers	not applicable	EFSA-Q-2016-00101
2015/26	1.11.1.7	Phenolic donor:hydrogen-peroxide oxidoreductase	Peroxidase	Aspergillus niger	MOX	EFSA-Q-2015-00274
2015/186	1.11.1.7	Phenolic donor:hydrogen-peroxide oxidoreductase	Peroxidase	Bovine milk - bovine cheese whey - bovine colostrum	not applicable	EFSA-Q-2017-00041
2013/10	1.11.1.7	Phenolic donor:hydrogen-peroxide oxidoreductase	Peroxidase	Soy bean hulls	not applicable	EFSA-Q-2013-00897
2015/169	2.3.2.13	Protein-glutamine:amine γ-glutamyltransferase	Transglutaminase	Streptomyces mobaraensis	DSM 40587	EFSA-Q-2016-00657
2015/188	2.3.2.13	Protein-glutamine:amine γ-glutamyltransferase	Transglutaminase	Streptomyces mobaraensis	DSM 40587	EFSA-Q-2017-00615
2015/10	2.3.2.13	Protein-glutamine:amine γ-glutamyltransferase	Transglutaminase	Streptoverticillium mobaraense	S-8112	EFSA-Q-2015-00095
2015/171	2.4.1.18	(1→4)-α-D-glucan:(1→4)-α-D-glucan 6-α-D-[(1→4)-α-D-glucano]-transferase	1,4-alpha-Glucan branching enzyme	Bacillus subtilis	BR151 (pUAQ2)	EFSA-Q-2017-00408
2015/147	2.4.1.18	(1→4)-α-D-glucan:(1→4)-α-D-glucan 6-α-D-[(1→4)-α-D-glucano]-transferase	1,4-alpha-Glucan branching enzyme	Geobacillus stearothermophilus	TRBE14	EFSA-Q-2016-00100
2015/163	2.4.1.19	(1->4)-alpha-D-glucan:(1->4)-alpha-D-glucan 4-alpha-D-[(1->4)-alpha-D-glucano]-transferase (cyclizing)	Cyclomaltodextrin glucanotransferase	Bacillus circulans	not available	EFSA-Q-2016-00523
2015/201	2.4.1.19	(1->4)-alpha-D-glucan:(1->4)-alpha-D-glucan 4-alpha-D-[(1->4)-alpha-D-glucano]-transferase (cyclizing)	Cyclomaltodextrin glucanotransferase	Escherichia coli	WCM105x pCM703	EFSA-Q-2016-00530
2015/202	2.4.1.19	(1->4)-alpha-D-glucan:(1->4)-alpha-D-glucan 4-alpha-D-[(1->4)-alpha-D-glucano]-	Cyclomaltodextrin glucanotransferase	Escherichia coli	WCM105x pCM6420	EFSA-Q-2016-00531

		transferase (cyclizing)				
2015/03	2.4.1.19	(1->4)-alpha-D-glucan:(1->4)-alpha-D-glucan 4-alpha-D-[(1->4)-alpha-D-glucano]-transferase (cyclizing)	Cyclomaltodextrin glucanotransferase	Geobacillus stearothermophilus	St-88	EFSA-Q-2015-00230
2015/88	2.4.1.19	(1->4)-alpha-D-glucan:(1->4)-alpha-D-glucan 4-alpha-D-[(1->4)-alpha-D-glucano]-transferase (cyclizing)	Cyclomaltodextrin glucanotransferase	Geobacillus stearothermophilus	AE-KCGT	EFSA-Q-2015-00081
2015/175	2.4.1.19	(1->4)-alpha-D-glucan:(1->4)-alpha-D-glucan 4-alpha-D-[(1->4)-alpha-D-glucano]-transferase (cyclizing)	Cyclomaltodextrin glucanotransferase	Geobacillus stearothermophilus	not available	EFSA-Q-2016-00863
2015/89	2.4.1.19	(1->4)-alpha-D-glucan:(1->4)-alpha-D-glucan 4-alpha-D-[(1->4)-alpha-D-glucano]-transferase (cyclizing)	Cyclomaltodextrin glucanotransferase	Paenibacillus alginolyticus	AE-CGT	EFSA-Q-2015-00082
2015/199	2.4.1.25	(1→4)-α-D-glucan:(1→4)-α-D-glucan 4-α-D-glycosyltransferase	4-alpha-glucanotransferase	Bacillus amyloliquefaciens	MAS	EFSA-Q-2017-00405
2015/128	2.4.1.25	(1→4)-α-D-glucan:(1→4)-α-D-glucan 4-α-D-glycosyltransferase	4-alpha-glucanotransferase	Geobacillus pallidus	AE-SAS	EFSA-Q-2016-00033
2015/157	2.4.1.140	Sucrose:(1→6)[(1→3)]-α-D-glucan 6(3)-α-D-glucosyltransferase	Alternansucrase	Leuconostoc citreum	NRRL B-30894	EFSA-Q-2016-00209
2014/04	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Aspergillus niger	LFS	EFSA-Q-2014-00325
2015/22	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Aspergillus niger	NZYM-DB	EFSA-Q-2015-00234
2015/28	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Aspergillus niger	AE-L	EFSA-Q-2015-00276
2015/144	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Aspergillus niger	FL 108SC	EFSA-Q-2016-00099
2015/154	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Aspergillus niger	NL 151	EFSA-Q-2016-00654
2015/63	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Aspergillus niger agg.	FL100SC	EFSA-Q-2015-00447
2015/72	3.1.1.3	Triacylglycerol	Triacylglycerol	Aspergillus	FL105SC	EFSA-Q-

		acylhydrolase	lipase	niger agg.		2015-00561
2012/03	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Aspergillus oryzae	NZYM-LH	EFSA-Q-2012-01009
2012/05	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Aspergillus oryzae	NZYM-FL	EFSA-Q-2013-00197
2013/01	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Aspergillus oryzae	NZYM-AL	EFSA-Q-2013-00198
2015/82	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Aspergillus oryzae	NZYM-PH	EFSA-Q-2015-00664
2013/17	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Candida cylindracea	AE-LAYH	EFSA-Q-2014-00113
2015/37	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Candida cylindracea	not available	EFSA-Q-2015-00339
2015/32	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Candida rugosa	AE-LAY	EFSA-Q-2015-00291
2015/44	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Hansenula polymorpha	DP-Jzk33	EFSA-Q-2015-00374
2015/94	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Mucor javanicus	AE-LM	EFSA-Q-2015-00692
2014/17	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Penicillium roqueforti	AE-LRF	EFSA-Q-2014-00545
2015/19	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Pregastric tissues of cattle, goat and sheep	not applicable	EFSA-Q-2015-00131
2014/24	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Rhizopus niveus	AE-N	EFSA-Q-2014-00732
2013/16	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Rhizopus oryzae	AE-TL	EFSA-Q-2014-00112
2015/189	3.1.1.3	Triacylglycerol acylhydrolase	Triacylglycerol lipase	Trichoderma reesei	RF10625	EFSA-Q-2016-00212
2014/48	3.1.1.4	Phosphatidylcholine 2-acylhydrolase	Phospholipase A2	Aspergillus niger	PLA	EFSA-Q-2015-00043
2015/141	3.1.1.4	Phosphatidylcholine 2-acylhydrolase	Phospholipase A2	Porcine pancreas	not applicable	EFSA-Q-2016-00084
2015/78	3.1.1.4	Phosphatidylcholine 2-acylhydrolase	Phospholipase A2	Streptomyces violaceoruber	AS-10	EFSA-Q-2016-00132
2014/12	3.1.1.4	Phosphatidylcholine 2-acylhydrolase	Phospholipase A2	Trichoderma reesei	RF8793	EFSA-Q-2014-00411
2014/43	3.1.1.5	2-lysophosphatidylcholin	Lysophospholipase	Aspergillus	NZYM-LP	EFSA-Q-

		e acylhydrolase		niger		2014-00919
2015/51	3.1.1.5	2-lysophosphatidylcholine acylhydrolase	Lysophospholipase	Trichoderma reesei	RF7206	EFSA-Q-2015-00410
2014/33			Pectinase (mixture of polygalacturonase, pectinesterase, pectin lyase and arabanase)	Aspergillus niger	ASNSC	EFSA-Q-2014-00839
	3.1.1.11	Pectin pectylhydrolase	Pectinesterase			EFSA-Q-2014-00841
	3.2.1.15	(1→4)-α-D-galacturonan glycanohydrolase	Polygalacturonase			EFSA-Q-2014-00840
	3.2.1.99	5-α-L-arabinan 5-α-L-arabinanohydrolase	Arabinan endo-1,5-alpha-L-arabinanase			EFSA-Q-2014-00843
	4.2.2.10	(1→4)-6-O-methyl-α-D-galacturonan lyase	Pectin lyase			EFSA-Q-2014-00842
2014/47	3.1.1.11 3.2.1.15 3.2.1.99 4.2.2.10		Pectinase (Poly-galacturonase; Pectin esterase; Pectin Lyase; Arabinan endo-1,5-α-L-arabinanase (arabanase))	Aspergillus niger	not available	EFSA-Q-2022-00536 EFSA-Q-2022-00543 EFSA-Q-2023-00243 EFSA-Q-2023-00266 EFSA-Q-2023-00269 EFSA-Q-2023-00270 EFSA-Q-2023-00244 EFSA-Q-2023-00245 EFSA-Q-2023-00265 EFSA-Q-

						2022-00283 EFSA-Q-2023-00020 EFSA-Q-2023-00241 EFSA-Q-2023-00227 EFSA-Q-2023-00272 EFSA-Q-2023-00271 EFSA-Q-2021-00587 EFSA-Q-2020-00650
2014/49	3.1.1.11	Pectin pectylhydrolase	Pectinesterase	Aspergillus niger	PME	EFSA-Q-2015-00044
2015/07	3.1.1.11	Pectin pectylhydrolase	Pectinesterase	Aspergillus niger	FLZSC	EFSA-Q-2015-00087
2014/29	3.1.1.11	Pectin pectylhydrolase	Pectin esterase	Trichoderma reesei	RF6201	EFSA-Q-2014-00799
2015/129	3.1.1.20	Tannin acylhydrolase	Tannase	Aspergillus niger	AE-TAN	EFSA-Q-2016-00034
2015/123	3.1.1.20	Tannin acylhydrolase	Tannase	Aspergillus oryzae	TAN 206	EFSA-Q-2016-00534
2015/174	3.1.1.20	Tannin acylhydrolase	Tannase	Aspergillus oryzae	NBRC110971 and No. 11-5	EFSA-Q-2023-00277 EFSA-Q-2023-00300
2014/18	3.1.1.23	Glycerol-ester acylhydrolase	Acylglycerol lipase	Penicillium camemberti	AE-LG	EFSA-Q-2014-00668
2015/99	3.1.1.23	Glycerol-ester acylhydrolase	Acylglycerol lipase	Penicillium camemberti	AE-LGS	EFSA-Q-2015-00757
2014/45	3.1.1.32	Phosphatidylcholine 1-acylhydrolase	Phospholipase A1	Aspergillus oryzae	NZYM-PP	EFSA-Q-2014-00921
2015/131	3.1.3.8	Myo-inositol-hexakisphosphate 3-phosphohydrolase	3-Phytase	Aspergillus niger	PHY93-08	EFSA-Q-2016-00575

2015/83	3.1.3.26	Myo-inositol-hexakisphosphate 4-phosphohydrolase	4-Phytase	Trichoderma reesei	DP-Nzt55	EFSA-Q-2015-00665
2015/29	3.1.26.5	no systematic name	Ribonuclease P	Penicillium citrinum	AE-RP	EFSA-Q-2015-00288
2015/116	3.1.30.1	no systematic name	Aspergillus nuclease S1	Penicillium citrinum	NP-11-15	EFSA-Q-2016-00845
2013/20	3.1.4.1	Oligonucleotide 5'-nucleotidohydrolase	Phosphodiesterase I	Leptographium procerum	FDA	EFSA-Q-2013-01006
2015/190	3.1.4.3	Phosphatidylcholine cholinephosphohydrolase	Phospholipase C	Pichia pastoris	PRF	EFSA-Q-2016-00201
2015/146	3.1.4.4	Phosphatidylcholine phosphatidohydrolase	Phospholipase D	Streptomyces netropsis	DSZM 40093	EFSA-Q-2016-00536
2015/143	3.1.4.4	Phosphatidylcholine phosphatidohydrolase	Phospholipase D	Streptomyces violaceoruber	pPDN	EFSA-Q-2016-00206
2014/02	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Aspergillus niger	NZYM-MC	EFSA-Q-2014-00306
2014/13	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Aspergillus niger	NZYM-SB	EFSA-Q-2014-00413
2015/132	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Aspergillus niger	AS 29-286	EFSA-Q-2016-00576
2015/182	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Aspergillus niger	DP-Azb60	EFSA-Q-2016-00273
2012/04	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Aspergillus oryzae	NZYM-NA	EFSA-Q-2012-01010
2014/42	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Aspergillus oryzae	AE-AA	EFSA-Q-2014-00913
2015/118	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Aspergillus oryzae	L729-48	EFSA-Q-2016-00205
2015/193	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Aspergillus oryzae	DP-Bzb41	EFSA-Q-2016-00176
2014/22	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus amyloliquefaciens	BANSC	EFSA-Q-2014-00730
2015/117	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus amyloliquefaciens	not available	EFSA-Q-2022-00599 EFSA-Q-2022-00594 EFSA-Q-

						2022-00514 EFSA-Q-2022-00574
2015/205	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus amyloliquefaciens	DP-Czb53	EFSA-Q-2016-00204
2015/161	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Paenibacillus alginolyticus	not available	EFSA-Q-2016-00521
2015/162	2.4.1.24	(1→4)-α-D-glucan:(1→4)-α-D-glucan(D-glucose) 6-α-D-glucosyltransferase	1,4-α-glucan 6-α-glucosyltransferase	Paenibacillus alginolyticus	not available	EFSA-Q-2016-00522
2012/02	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	NZYM-KE	EFSA-Q-2012-00898
2013/02	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	NZYM-AC	EFSA-Q-2013-00586
2013/04	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	NZYM-BC	EFSA-Q-2013-00685
2014/26	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	NZYM-AV	EFSA-Q-2014-00794
2014/40	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	not available	EFSA-Q-2020-00649 EFSA-Q-2022-00592 EFSA-Q-2022-00549
2015/02	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	NZYM-AN	EFSA-Q-2015-00084
2015/84	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	DP-Dzb54	EFSA-Q-2015-00666
2015/110	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	DP-Dzb44	EFSA-Q-2015-00836
2015/136	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	DP-Dzb52	EFSA-Q-2016-00093
2015/178	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	DP-Dzb45	EFSA-Q-2016-00143
2015/195	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus licheniformis	DP-Dzb25	EFSA-Q-2016-00202
2014/41	3.2.1.1	4-α-D-glucan	Alpha-amylase	Bacillus	NBA	EFSA-Q-

		glucanohydrolase		subtilis		2014-00912
2015/108	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Bacillus subtilis	not available	EFSA-Q-2020-00652 EFSA-Q-2022-00607
2015/181	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Geobacillus stearothermophilus	DP-Gzb47	EFSA-Q-2016-00145
2014/16	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Microbacterium imperiale	AE-AMT	EFSA-Q-2014-00544
2015/170	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Pseudomonas fluorescens	BD15754	EFSA-Q-2016-00200
2015/86	3.2.1.1	4-α-D-glucan glucanohydrolase	Alpha-amylase	Trichoderma reesei	DP-Nzb48	EFSA-Q-2015-00681
2015/93	3.2.1.2	4-α-D-glucan maltohydrolase	Beta-amylase	Bacillus flexus	AE-BAF	EFSA-Q-2015-00691
2015/27	3.2.1.2	4-α-D-glucan maltohydrolase	Beta-amylase	Bacillus licheniformis	NZYM-JA	EFSA-Q-2015-00275
2014/23	3.2.1.2	4-α-D-glucan maltohydrolase	Beta-amylase	Barley (Hordeum vulgare)	not applicable	EFSA-Q-2014-00731
2015/150	3.2.1.2	4-α-D-glucan maltohydrolase	Beta-amylase	Glycine max	not applicable	EFSA-Q-2016-00085
2015/01	3.2.1.2	4-α-D-glucan maltohydrolase	Beta-amylase	Wheat (Triticum spp.)	not applicable	EFSA-Q-2015-00083
2013/05	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Aspergillus niger	NZYM-BR	EFSA-Q-2013-00686
2013/15	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Aspergillus niger	NZYM-BE	EFSA-Q-2013-00896
2014/03	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Aspergillus niger	NZYM-BF	EFSA-Q-2014-00307
2015/14	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Aspergillus niger	NZYM-BW	EFSA-Q-2015-00128
2015/33	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Aspergillus niger	not available	EFSA-Q-2022-00522 EFSA-Q-2023-00177 EFSA-Q-

						2020-00651 EFSA-Q-2023-00239 EFSA-Q-2023-00219 EFSA-Q-2023-00228 EFSA-Q-2023-00223 EFSA-Q-2020-00795
2015/23	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Rhizopus oryzae	AE-G	EFSA-Q-2015-00272
2015/125	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Rhizopus oryzae	CU634-1775	EFSA-Q-2016-00535
2015/137	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Trichoderma reesei	DP-Nzh49	EFSA-Q-2016-00094
2015/140	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Trichoderma reesei	DP-Nzh34	EFSA-Q-2016-00097
2015/183	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Trichoderma reesei	DP-Nzh63	EFSA-Q-2016-00173
2015/194	3.2.1.3	4-α-D-glucan glucohydrolase	Glucan 1,4-alpha-glucosidase	Trichoderma reesei	DP-Nzh38	EFSA-Q-2016-00177
2013/13	3.2.1.3/ 3.2.1.1	4-alpha-D-glucan glucohydrolase/ 4-alpha-D-glucan glucanohydrolase	Glucan 1,4-alpha-glucosidase/Alpha-amylase	Aspergillus niger	NZYM-BX	EFSA-Q-2013-00877
2015/38	3.2.1.8 / 3.2.1.78 3.2.1.4 3.2.1.6	4-β-D-xylan xylanohydrolase / 1,4-β-D-mannan mannanohydrolase 4-β-D-glucan 4-glucanohydrolase 3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Hemicellulase (Endo-1,4-β-xylanase and Mannan endo-1,4-beta mannosidase) Cellulase Endo-1,3(4)-β-glucanase	Aspergillus niger	not available	EFSA-Q-2022-00519 EFSA-Q-2022-00576 EFSA-Q-2023-00208 EFSA-Q-2023-00221 EFSA-Q-2023-00234 EFSA-Q-

						2022-00776 EFSA-Q-2023-00225 EFSA-Q-2023-00240 EFSA-Q-2023-00242 EFSA-Q-2023-00230 EFSA-Q-2023-00235 EFSA-Q-2021-00693 EFSA-Q-2022-00518
2014/27	3.2.1.4	4-β-D-glucan 4-glucanohydrolase	Cellulase	Humicola insolens	NZYM-ST	EFSA-Q-2014-00797
	3.2.1.6	3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Endo-1,3(4)-β-glucanase			EFSA-Q-2014-00795
	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase			EFSA-Q-2014-00796
2015/142	3.2.1.4	4-β-D-glucan 4-glucanohydrolase	Cellulase	Penicillium funiculosum	DP-Lzc35	EFSA-Q-2016-00098
2014/31	3.2.1.4 3.2.1.6 3.2.1.8	4-β-D-glucan 4-glucanohydrolase 3(or 4)-β-D-glucan 3(4)-glucanohydrolase 4-β-D-xylan xylanohydrolase	Cellulase Endo-1,3(4)-β-glucanase Endo-1,4-β-xylanase	Talaromyces emersonii	not available	EFSA-Q-2021-00646 EFSA-Q-2023-00199 EFSA-Q-2021-00746
2014/32	3.2.1.4	4-β-D-glucan 4-glucanohydrolase 3(or 4)-β-D-glucan	Cellulase	Trichoderma reesei	not available	EFSA-Q-2022-00609 EFSA-Q-2023-00297 EFSA-Q-

	3.2.1.6 3.2.1.8	3(4)-glucanohydrolase 4-β-D-xylan xylanohydrolase	Endo-1,3(4)-β-glucanase Endo-1,4-β-xylanase			2023-00295 EFSA-Q-2023-00294 EFSA-Q-2023-00229 EFSA-Q-2020-00648 EFSA-Q-2021-00689 EFSA-Q-2022-00869 EFSA-Q-2023-00194 EFSA-Q-2021-00545
2015/70	3.2.1.4	4-β-D-glucan 4-glucanohydrolase	Cellulase	Trichoderma reesei	DP-Nzc36	EFSA-Q-2015-00454
2015/74	3.2.1.4	4-β-D-glucan 4-glucanohydrolase	Cellulase	Trichoderma reesei	RF5261	EFSA-Q-2015-00563
2014/56	3.2.1.4	4-β-D-glucan 4-glucanohydrolase	Cellulase	Trichoderma viride	AE-CT	EFSA-Q-2015-00067
2013/25	3.2.1.6	3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Endo-1,3(4)-β-glucanase	Aspergillus aculeatus	NZYM-RE	EFSA-Q-2014-00201
	3.2.1.15	(1→4)-α-D-galacturonan glycanohydrolase	Polygalacturonase			EFSA-Q-2014-00200
2013/26	3.2.1.6	3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Endo-1,3(4)-β-glucanase	Aspergillus niger	CBS-612.94	EFSA-Q-2014-00202
2015/73	3.2.1.6	3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Endo-1,3(4)-β-glucanase	Bacillus subtilis	CBS 613.94	EFSA-Q-2015-00562
2015/109	3.2.1.6	3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Endo-1,3(4)-β-glucanase	Bacillus subtilis	DP-Ezm28	EFSA-Q-2015-00828
2015/95	3.2.1.6	3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Endo-1,3(4)-β-glucanase	Cellulosimicrobium cellulans	AE-TN	EFSA-Q-2015-00693
2014/07	3.2.1.6	3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Endo-1,3(4)-β-glucanase	Disporotrichum dimorphosporum	DXL	EFSA-Q-2014-00356
	3.2.1.8	4-β-D-xylan	Endo-1,4-β-			EFSA-Q-

		xylanohydrolase	xylanase			2014-00355
2015/81	3.2.1.6	3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Endo-1,3(4)-β-glucanase	Talaromyces versatilis	PF8	EFSA-Q-2015-00663
2015/165	3.2.1.6	3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Endo-1,3(4)-β-glucanase	Trichoderma reesei	MUCL 49754	EFSA-Q-2017-00084
2015/107	3.2.1.7	1-β-D-fructan fructanohydrolase	Inulinase	Aspergillus niger	NZYM-KF	EFSA-Q-2015-00827
2015/34	3.2.1.7	1-β-D-fructan fructanohydrolase	Inulinase	Aspergillus oryzae	MUCL 44346	EFSA-Q-2015-00337
2013/24	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Aspergillus acidus	RF7398	EFSA-Q-2014-00165
2014/01	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Aspergillus niger	XYL	EFSA-Q-2014-00305
2014/50	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Aspergillus niger	XEA	EFSA-Q-2015-00045
2012/01	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Aspergillus oryzae	NZYM-FB	EFSA-Q-2012-00897
2013/11	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Aspergillus oryzae	NZYM-FA	EFSA-Q-2013-00789
2014/53	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Bacillus licheniformis	NZYM-CE	EFSA-Q-2015-00064
2014/34	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Bacillus pumilus	BLXSC	EFSA-Q-2014-00844
2013/28	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Bacillus subtilis	XAS	EFSA-Q-2014-00293
2014/25	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Bacillus subtilis	LMGS-28355	EFSA-Q-2014-00733
2014/54	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Bacillus subtilis	LMG-S-24584	EFSA-Q-2015-00065
2015/49	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Bacillus subtilis	LMG-S-27588	EFSA-Q-2015-00408
2015/113	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Bacillus subtilis	DP-Ezd31	EFSA-Q-2015-00839
2014/14	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Trichoderma citrinoviride	TCLSC	EFSA-Q-2014-00543
2013/12	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Trichoderma reesei	RF5427	EFSA-Q-2013-00876 EFSA-Q-2014-00735
2014/08	3.2.1.8	4-β-D-xylan	Endo-1,4-β-	Trichoderma	RF5703	EFSA-Q-

		xylanohydrolase	xylanase	reesei		2014-00410
2014/15	3.2.1.8	4-β-D-xylan xylanohydrolase	Endo-1,4-β-xylanase	Trichoderma reesei	Dp-Nzd22	EFSA-Q-2014-00667
2015/166	3.2.1.8/ 3.2.1.6	4-β-D-xylan xylanohydrolase/3(or 4)-β-D-glucan 3(4)-glucanohydrolase	Endo-1,4-β-xylanase/Endo-1,3(4)-β-glucanase	Trichoderma reesei	DP-Nya67	EFSA-Q-2017-00085
2015/92	3.2.1.11	6-α-D-glucan 6-glucanohydrolase	Dextranase	Chaetomium erraticum	AE-DX	EFSA-Q-2015-00685
2015/15	3.2.1.11	6-α-D-glucan 6-glucanohydrolase	Dextranase	Chaetomium gracile	ATCC 16153	EFSA-Q-2015-00231
2015/77	3.2.1.14	(1→4)-2-acetamido-2-deoxy-β-D-glucan glycanohydrolase	Chitinase	Streptomyces violaceoruber	pChi	EFSA-Q-2015-00621
2014/10	3.2.1.15	(1→4)-α-D-galacturonan glycanohydrolase	Polygalacturonase	Aspergillus niger	EPG	EFSA-Q-2014-00402 EFSA-Q-2015-00178
2015/06	3.2.1.15	(1→4)-α-D-galacturonan glycanohydrolase	Polygalacturonase	Aspergillus niger	FLYSC	EFSA-Q-2015-00086
2015/156	3.2.1.15	(1→4)-α-D-galacturonan glycanohydrolase	Polygalacturonase	Rhizopus oryzae	MC3-3-9	EFSA-Q-2016-00656
2015/127	3.2.1.15	(1→4)-α-D-galacturonan glycanohydrolase	Polygalacturonase	Talaromyces cellulolyticus	not available	EFSA-Q-2016-00528
2014/28	3.2.1.15	(1→4)-α-D-galacturonan glycanohydrolase	Polygalacturonase	Trichoderma reesei	RF6197	EFSA-Q-2014-00798
2015/46	3.2.1.17	Peptidoglycan N-acetylmuramoylhydrolase	Lysozyme	Hen's egg	not applicable	EFSA-Q-2022-00009 EFSA-Q-2022-00001
2014/30	3.2.1.20	Alpha-D-glucoside glucohydrolase	Alpha-glucosidase	Aspergillus niger	AE-TGU	EFSA-Q-2014-00800
2015/24	3.2.1.21	Beta-D-glucoside glucohydrolase	Beta-Glucosidase	Penicillium multicolor	AE-GLY	EFSA-Q-2015-00273
2015/134	3.2.1.22	α-D-galactoside galactohydrolase	Alpha-galactosidase	Aspergillus niger	AGS614	EFSA-Q-2016-00578
2013/21	3.2.1.22	α-D-galactoside galactohydrolase	Alpha-galactosidase	Saccharomyces cerevisiae	CBS-615-94	EFSA-Q-2013-01019

2014/38	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Aspergillus niger	TOL	EFSA-Q-2014-00853
2015/91	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Aspergillus oryzae	AE-LA	EFSA-Q-2015-00684
2015/135	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Aspergillus oryzae	GL470	EFSA-Q-2016-00579
2015/176	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Aspergillus oryzae	DP-Bzg59	EFSA-Q-2016-00141
2014/21	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Bacillus circulans	AE-LT	EFSA-Q-2014-00670
2015/180	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Bacillus circulans	M3-1	EFSA-Q-2016-00210
2015/08	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Bacillus licheniformis	NZYM-BT	EFSA-Q-2015-00093
2015/112	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Bacillus subtilis	DP-Ezg29	EFSA-Q-2015-00838
2015/79	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Escherichia coli	Bg1A MCB3	EFSA-Q-2015-00622
2014/19	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Kluyveromyces lactis	AE-KL	EFSA-Q-2014-00669
2015/50	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Kluyveromyces lactis	not available	EFSA-Q-2021-00182 EFSA-Q-2022-00598 EFSA-Q-2021-00469
2015/153	3.2.1.23	β-D-galactoside galactohydrolase	Beta-galactosidase	Sporobolomyces singularis	YIT 10047	EFSA-Q-2016-00529
2015/115	3.2.1.26	β-D-fructofuranoside fructohydrolase	Beta-Fructofuranosidase	Aspergillus fijiensis	ATCC 20611	EFSA-Q-2016-00840
2015/35	3.2.1.26	β-D-fructofuranoside fructohydrolase	Beta-Fructofuranosidase	Saccharomyces cerevisiae	not available	EFSA-Q-2021-00695 EFSA-Q-2022-00521 EFSA-Q-2022-00627
2015/133	3.2.1.26/ 3.2.1.21	β-D-fructofuranoside fructohydrolase, β-D-glucoside	Beta-Fructofuranosidase and Beta-	Aspergillus niger	IN 319	EFSA-Q-2016-00577

		glucohydrolase	glucosidase			
2015/177	3.2.1.28	Alpha,alpha-trehalose glucohydrolase	Alpha, alpha-trehalase	Trichoderma reesei	DP-Nzs51	EFSA-Q-2016-00142
2015/12	3.2.1.39	3-β-D-glucan glucanohydrolase	Glucan endo-1,3-beta-D-glucosidase	Streptomyces violaceoruber	pGlu	EFSA-Q-2015-00097
2015/98	3.2.1.40	α-L-rhamnoside rhamnohydrolase	Alpha-L-rhamnosidase	Penicillium decumbens	AE-HP	EFSA-Q-2015-00756
2015/85	3.2.1.41	Pullulan 6-α-glucanohydrolase	Pullulanase	Bacillus licheniformis	DP-Dzp39	EFSA-Q-2015-00667
2015/13	3.2.1.41	Pullulan 6-α-glucanohydrolase	Pullulanase	Bacillus subtilis	NZYM-AK	EFSA-Q-2015-00127
2015/66	3.2.1.41	Pullulan 6-α-glucanohydrolase	Pullulanase	Klebsiella pneumoniae	AE-PUL	EFSA-Q-2015-00450
2015/67	3.2.1.41	Pullulan 6-α-glucanohydrolase	Pullulanase	Pullulanibacillus naganoensis	AE-PL	EFSA-Q-2015-00451
2014/20	3.2.1.55	α-L-arabinofuranoside non-reducing end α-L-arabinofuranosidase	Non-reducing end alpha-L-arabinofuranosidase	Aspergillus niger	ARF	EFSA-Q-2014-00671
2015/64	3.2.1.60	4-α-D-glucan maltotetraohydrolase	Glucan 1,4-α-maltotetraohydrolase	Bacillus licheniformis	DP-Dzf24	EFSA-Q-2015-00448
2015/138	3.2.1.60	4-α-D-glucan maltotetraohydrolase	Glucan 1,4-α-maltotetraohydrolase	Bacillus licheniformis	DP-Dzr46	EFSA-Q-2016-00095
2015/164	3.2.1.68	Glycogen α-1,6-glucanohydrolase	Isoamylase	Pseudomonas amyloderamosa	not available	EFSA-Q-2016-00524
2015/09	3.2.1.78	1,4-β-D-mannan mannanohydrolase	Mannan endo-1,4-beta mannosidase	Trichoderma reesei	RF6232	EFSA-Q-2015-00094
2015/139	3.2.1.133	4-α-D-glucan α-maltohydrolase	Glucan 1,4-α-maltohydrolase	Bacillus licheniformis	DP-Dzr50	EFSA-Q-2016-00096
2013/08	3.2.1.133	4-α-D-glucan α-maltohydrolase	Glucan 1,4-α-maltohydrolase	Bacillus subtilis	MAM	EFSA-Q-2013-00790
2014/46	3.2.1.133	4-α-D-glucan α-maltohydrolase	Glucan 1,4-α-maltohydrolase	Bacillus subtilis	NZYM-OC	EFSA-Q-2014-00922
2014/51	3.2.1.133	4-α-D-glucan α-maltohydrolase	Glucan 1,4-α-maltohydrolase	Bacillus subtilis	NZYM-SO	EFSA-Q-2015-00046
2015/11	3.2.1.133	4-α-D-glucan α-maltohydrolase	Glucan 1,4-α-maltohydrolase	Bacillus subtilis	NZYM-SM	EFSA-Q-2015-00096

2015/62	3.2.1.133	4-α-D-glucan α-maltohydrolase	Glucan 1,4-α-maltohydrolase	Escherichia coli	BLASC	EFSA-Q-2015-00446
2015/159	3.2.1.141	4-α-D-[(1->4)-α-D-glucano]trehalose glucanohydrolase (trehalose-producing)	4-α-D-{(1→4)-α-D-glucano}trehalose trehalohydrolase	Arthrobacter ramosus	not available	EFSA-Q-2016-00135
2015/160	5.4.99.15	(1→4)-α-D-glucan 1-α-D-glucosylmutase	(1→4)-α-D-glucan 1-α-D-glucosylmutase	Arthrobacter ramosus	not available	EFSA-Q-2016-00136
2015/25	3.2.1.XX	no systematic name	Cellulase complex	Talaromyces cellulolyticus or Talaromyces pinophilus	not available	EFSA-Q-2015-00370
2013/18	3.4.11.1	no systematic name	Leucyl aminopeptidase	Aspergillus oryzae	AE-MB	EFSA-Q-2014-00114
2015/41	3.4.11.1	no systematic name	Leucyl aminopeptidase	Aspergillus oryzae	NZYM-EX	EFSA-Q-2015-00373
2015/76	X.X.X.X 3.4.11.1 3.4.21.63 3.4.23.18	no systematic name	Protease Leucyl aminopeptidase Oryzin Aspergillopepsin I	Aspergillus oryzae	not available	EFSA-Q-2023-00246 EFSA-Q-2023-00247 EFSA-Q-2023-00248
2014/06	3.4.11.1	no systematic name	Leucyl aminopeptidase	Rhizopus oryzae	AE-PER	EFSA-Q-2014-00354
2015/152	3.4.11.2	no systematic name	Membrane alanyl aminopeptidase	Lactococcus lactis	DGCC5920	EFSA-Q-2016-00208
2015/52	3.4.16.5	no systematic name	Carboxypeptidase C	Aspergillus niger	PEG	EFSA-Q-2015-00445
2013/27	3.4.21.1	no systematic name	Chymotrypsin	Bacillus licheniformis	NZYM-RH	EFSA-Q-2014-00292
2014/11	3.4.21.4	no systematic name	Trypsin	Fusarium venenatum	NZYM-FG	EFSA-Q-2014-00412
2015/36	3.4.21.4	no systematic name	Trypsin	Porcine pancreatic glands	not applicable	EFSA-Q-2015-00338
2013/09	3.4.21.4/ 3.4.21.1	no systematic name	Trypsin and Chymotrypsin	Pig Pancreas	not applicable	EFSA-Q-2014-00163
2015/40	3.4.21.4/ 3.4.21.1	no systematic name	Trypsin and Chymotrypsin	Porcine pancreatic glands	not applicable	EFSA-Q-2015-00372

2014/55	3.4.21.4/ 3.4.21.1/ 3.4.21.36/ 3.4.17.2	no systematic name	Protease complex (trypsin, chymotrypsin, pancreatic elastase and carboxypeptidase B)	Pig pancreas	not applicable	EFSA-Q-2015-00066
2013/07	3.4.21.5	no systematic name	Thrombin	Blood plasma of slaughtered pigs and cattle	not applicable	EFSA-Q-2014-00499
2014/37	3.4.21.26	no systematic name	Prolyl endopeptidase	Aspergillus niger	GEP	EFSA-Q-2014-00852
2015/18	3.4.21.62	no systematic name	Subtilisin	Bacillus licheniformis	not available	EFSA-Q-2022-00545 EFSA-Q-2022-00366 EFSA-Q-2023-00236 EFSA-Q-2022-00601 EFSA-Q-2023-00215
2015/184	3.4.21.62	no systematic name	Subtilisin	Bacillus subtilis	DP-Ezx62	EFSA-Q-2016-00174
2015/192	3.4.21.62	no systematic name	Subtilisin	Bacillus subtilis	DP-Ezx42	EFSA-Q-2016-00175
2015/31	3.4.21.63	no systematic name	Oryzin	Aspergillus melleus	AE-P	EFSA-Q-2015-00290
2014/44	3.4.21.111	no systematic name	Aqualysin 1	Bacillus subtilis	LMGS-25520	EFSA-Q-2014-00920
2015/45	3.4.22.2	no systematic name	Papain	Carica papaya	not applicable	EFSA-Q-2015-00559
2015/167	3.4.22.3	no systematic name	Ficain	Ficus glabrata	not applicable	EFSA-Q-2016-00866
2015/168	3.4.22.32	no systematic name	Stem Bromelain	Ananas comosus	not applicable	EFSA-Q-2016-00867
2015/100	3.4.23.4	no systematic name	Chymosin	Aspergillus niger var. awamori	DSM 29544	EFSA-Q-2015-00758

2015/101	3.4.23.4	no systematic name	Chymosin	Aspergillus niger var. awamori	DSM 29545	EFSA-Q-2015-00759
2015/102	3.4.23.4	no systematic name	Chymosin	Aspergillus niger var. awamori	DSM 29546	EFSA-Q-2015-00760
2015/203	3.4.23.4	no systematic name	Chymosin	Fourth stomachs of lamb and kid	not applicable	EFSA-Q-2017-00044
2015/05	3.4.23.4	no systematic name	Chymosin	Kluyveromyces lactis	CIN	EFSA-Q-2015-00085
2015/16	3.4.23.4	no systematic name	Chymosin	Kluyveromyces lactis	CHY	EFSA-Q-2015-00129
2015/200	3.4.23.4	no systematic name	Chymosin	Abomasum of Bos taurus	not applicable	EFSA-Q-2016-00658
2015/213	3.4.23.4 / 3.4.23.1 / 3.4.23.3	no systematic name	Rennet (Chymosin + Pepsin A + Gastricsin)	Kid abomasum	not applicable	EFSA-Q-2017-00045
2015/145	3.4.23.4 + 3.4.23.1	no systematic name	Rennet (Chymosin+Pepsin A)	Ovine and bovine stomach	not applicable	EFSA-Q-2016-00270
2015/21	3.4.23.4/ 3.4.23.1	no systematic name	Rennet (Chymosin and pepsin A)	Extracts from Bos primigenius (cattle), Bubalus bubalis (buffalo) ,Capra aegagrus hircus (goat) and Ovis aries (sheep)	not applicable	EFSA-Q-2022-00429 EFSA-Q-2021-00759 EFSA-Q-2022-00482 EFSA-Q-2022-00585 EFSA-Q-2022-00180
2015/69	3.4.23.4/ 3.4.23.1/ 3.1.1.3	no systematic name, Triacylglycerol acylhydrolase	Rennet Paste (Chymosin/Pepsin A/Triacylglycerol lipase)	Abomasum of domesticated ruminants (e.g. Bos primigenius, Capra aegagrus hircus and ovis aries)	not applicable	EFSA-Q-2015-00453
2015/214	not applicabl	no systematic name	Pancreatin	Porcine pancreas and	not applicable	EFSA-Q-2017-00043

	e			duodenum		
2015/155	3.4.23.18	no systematic name	Aspergillopepsin I	Aspergillus niger	AP 233	EFSA-Q-2016-00655
2015/39	3.4.23.18	no systematic name	Aspergillopepsin I	Trichoderma reesei	Dp-Nzq40	EFSA-Q-2015-00371
2015/80	3.4.23.18/ 3.4.23.19	no systematic name	Aspergillopepsin I / Aspergillopepsin II	Escherichia coli	DBD-0406	EFSA-Q-2015-00623
2015/68	3.4.23.21	no systematic name	Rhizopuspepsin	Rhizopus niveus	AE-N	EFSA-Q-2015-00452
2015/104	3.4.23.22	no systematic name	Endothiapepsin	Cryphonectria parasitica	DSM 29549	EFSA-Q-2015-00824
2014/35	3.4.23.23	no systematic name	Mucorpepsin	Rhizomucor miehei	MMR 164	EFSA-Q-2014-00851
2015/20	3.4.23.23	no systematic name	Mucorpepsin	Rhizomucor miehei	not available	EFSA-Q-2023-00017 EFSA-Q-2022-00179 EFSA-Q-2022-00201
2015/103	3.4.23.23	no systematic name	Mucorpepsin	Rhizomucor miehei	DSM 29547	EFSA-Q-2015-00761
2015/122	3.4.23.23	no systematic name	Mucorpepsin	Rhizomucor miehei	not available	EFSA-Q-2016-00030
2015/173	X.X.X.X	no systematic name	Plant coagulant	Flowers of Cynara cardunculus	not applicable	EFSA-Q-2016-00271
2015/204	3.4.23.40	no systematic name	Phytepsin	Flowers of cardoon (Cynara cardunculus var. sylvestris)	not applicable	EFSA-Q-2017-00048
2015/207	3.4.23.40	no systematic name	Phytepsin	Pistils of the flower of Cynara cardunculus	not applicable	EFSA-Q-2017-00087
2015/71	3.4.23.xx	not applicable	Mixture of aspartic proteinases	Cynara cardunculus	not applicable	EFSA-Q-2015-00560
2015/106	3.4.24.3	no systematic name	Microbial collagenase	Streptomyces violaceoruber	pCol	EFSA-Q-2015-00826

2015/87	3.4.24.27	no systematic name	Thermolysin	Geobacillus caldoproteolyticus	DP-Fzj32	EFSA-Q-2015-00682
2015/130	3.4.24.27	no systematic name	Thermolysin	Geobacillus stearothermophilus	AE-TP	EFSA-Q-2016-00083
2015/111	3.4.24.28	no systematic name	Bacillolysin	Bacillus amyloliquefaciens	not available	EFSA-Q-2021-00645 EFSA-Q-2022-00527 EFSA-Q-2022-00593 EFSA-Q-2022-00573 EFSA-Q-2022-00610 EFSA-Q-2021-00492
2015/114	3.4.24.28	no systematic name	Bacillolysin	Bacillus subtilis	not available	EFSA-Q-2022-00517
2013/14	3.5.1.1	L-asparagine amidohydrolase	Asparaginase	Aspergillus niger	ASP	EFSA-Q-2013-00895
2014/09	3.5.1.1	L-asparagine amidohydrolase	Asparaginase	Aspergillus niger	AGN	EFSA-Q-2014-00401
2013/03	3.5.1.1	L-Asparagine amidohydrolase	Asparaginase	Aspergillus oryzae	NZYM-SP	EFSA-Q-2013-00587
2014/52	3.5.1.1	L-asparagine amidohydrolase	Asparaginase	Aspergillus oryzae	NZYM-OA	EFSA-Q-2015-00063
2014/36	3.5.1.1	L-asparagine amidohydrolase	Asparaginase	Bacillus subtilis	NZYM-CK	EFSA-Q-2014-00845
2015/30	3.5.1.2	L-glutamine amidohydrolase	Glutaminase	Bacillus amyloliquefaciens	AE-GT	EFSA-Q-2015-00289
2015/148	3.5.1.5	Urea amidohydrolase	Urease	Lactobacillus fermentum	48/72	EFSA-Q-2016-00102
2015/97	3.5.1.44	Protein-L-glutamine amidohydrolase	Protein-glutamine glutaminase	Chryseobacterium proteolyticum	AE-PG	EFSA-Q-2015-00695
2014/05	3.5.4.6	AMP aminohydrolase	AMP deaminase	Aspergillus melleus	AE-DN	EFSA-Q-2014-00326

2015/120	3.5.4.6	AMP aminohydrolase	AMP deaminase	Aspergillus oryzae	DEA 262	EFSA-Q-2015-00847
2015/90	3.5.4.6	AMP aminohydrolase	AMP deaminase	Streptomyces murinus	AE-DNTS	EFSA-Q-2015-00683
2015/124	4.1.1.5	(2S)-2-hydroxy-2-methyl-3-oxobutanoate carboxy-lyase [(3R)-3-hydroxybutan-2-one-forming]	Acetolactate decarboxylase	Bacillus licheniformis	NZYM-JB	EFSA-Q-2016-00031
2015/149	4.2.2.2	(1→4)-α-D-galacturonan lyase	Pectate lyase	Bacillus subtilis	11096	EFSA-Q-2016-00207
2015/126	5.3.1.5	D-xylose aldose-ketose-isomerase	Xylose isomerase	Streptomyces murinus	NZYM-GA	EFSA-Q-2016-00032
2015/196	5.3.1.5	D-xylose aldose-ketose-isomerase	Xylose isomerase	Streptomyces rubiginosus	DP-Pzn37	EFSA-Q-2016-00203
2015/17	4.2.2.10	(1→4)-6-O-methyl-α-D-galacturonan lyase	Pectin lyase	Aspergillus niger	FLOSC	EFSA-Q-2015-00130
2015/48	4.2.2.10	(1→4)-6-O-methyl-α-D-galacturonan lyase	Pectin lyase	Aspergillus niger	NZYM-PN	EFSA-Q-2015-00407
2013/23	4.2.2.10	(1→4)-6-O-methyl-α-D-galacturonan lyase	Pectin lyase	Trichoderma reesei	RF6199	EFSA-Q-2014-00164
2015/187	5.1.3.30	D-psicose 3-epimerase	D-psicose 3-epimerase	Escherichia coli	W3110-TKO	EFSA-Q-2016-00211
2015/206	5.3.3	D-fructose 4-epimerase	D-Fructose 4-Epimerase	Corynebacterium glutamicum	FIS003	EFSA-Q-2016-00525
2015/75	5.4.99.11	Sucrose glucosylmutase	Isomaltulose synthase	Protaminobacter rubrum	Z12A	EFSA-Q-2015-00620