

In der folgenden Tabelle sind die wichtigsten Charakteristika von publizierten PCR-Methoden zum Nachweis von allergenen Lebensmittel-Bestandteilen zusammengefasst. Vereinzelt wurden die Methoden nicht primär für die Allergenanalytik entwickelt, sie sind aber als prinzipiell dafür geeignet anzusehen. Die Angaben basieren auf publizierten Daten bzw. Informationen und wurden durch die Arbeitsgruppe nicht im Detail verifiziert.

Allergenes Lebensmittel	Autor	Jahr	Lit.	Valid. vs. ELISA?	Zielsequenz	Amplikongröße [bp]	Art der PCR	Sequenzverifikation	Sensitivität		
									pg DNA	Kopien	mg/kg
Buchweizen	Hirao et al.	2005	[1]		ITS und 5.8S rRNA	146	Real-time (SYBR)		0,005	n.v.	n.v.
Buchweizen	Hirao et al.	2006	[2]	ja	ITS und 5.8S rRNA	101	Real-time	Sonde	0,5-5	1-10	5-10
Cashew	Brzezinski et al.	2006	[3]		Ana o 3 2S Albumin	67	Real-time	Sonde	5	n.v.	100
Cashew	Piknova et al.	2007	[4]		Ana o 3 2S Albumin	66	Real-time	Sonde	1,25	2,5	100
Cashew	Ehlert et al.	2008	[5]		Ana o 3 2S Albumin	103	Real-time	Sonde	0,5	1	2
Erdnuss	Hird et al.	2003	[6]		Ara h 2 Trypsin-Inhibitor	66	Real-time	Sonde	n.v.	n.v.	2
Erdnuss	James et al.	2004	[7]		trnL	403	Endpunkt		n.v.	n.v.	n.v.
Erdnuss	Stephan et al.	2004	[8]	ja	Ara h 2 Trypsin-Inhibitor	86	Real-time	Sonde	n.v.	10	<10
Erdnuss	Rossi et al.	2006	[9]		Ara h 2 Trypsin-Inhibitor	201	PCR Array	Post-PCR Sonde	50	n.v.	n.v.
Erdnuss	Scaravelli et al.	2008	[10]		Ara h 3	78/105/114	Real-time	Sonde	2,5	<1	10
Erdnuss	Bergerova et al.	2011	[11]		Ara h 3	105	nested rt-PCR	Sonde	0,375	n.v.	n.v.
Erdnuss	Lopez-Calleja et al.	2013	[12]		Ara h 2	125	real-time PCR	Sonde	n.v.	n.v.	10
Erdnuss	Lopez-Calleja et al.	2013	[12]		ITS1	90	real-time PCR	Sonde	n.v.	n.v.	0.1
Erdnuss	Holzhauser et al.	2014	[13]	ja	Ara h 2	86	real-time PCR	Sonde	n.v.	n.v.	2
Erdnuss	Zhang et al.	2015	[14]	nein	Ara h 1	389	real-time PCR	Sonde	n.v.	n.v.	50

Fisch

Fisch	Sun et al.	2009	[15]		Parvalbumin	56	Real-time	Sonde	5-10	n.v.	n.v.
Fisch	Ishizaki et al.	2012	[16]		Cytochrome b	212	Endpunkt		n.v.	10	n.v.
Fisch	Herrero et al.	2014	[17]		18S rRNA	ca. 170-180	Real-time	Sonde	50	n.v.	n.v.
Kabeljau/Dorsch	Saull et al.	2016	[18]		Cytochrome b	185	LAMP				1000

Glutenhaltige Getreide

Weizen, Dinkel	Allmann et al.	1993	[19]	ja	rRNA: 25S-18S Interspacer	109	Endpunkt		1	n.v.	<300
	Alary et al.	2002	[20]		lipid transfer protein	61	Real-time	Sonde	n.v.	n.v.	n.v.
	James et al.	2004	[7]		trnL	397	Endpunkt		n.v.	n.v.	n.v.
	Debnath et al.	2009	[21]		LMW Glutenin Gene	135	Endpunkt		21,5	1,1-1,3	n.v.
	Mujico et al.	2011	[22]	ja	25S-18S intergenic region	51	Real-time	HRM	0,05	n.v.	n.v.
Roggen	Terzi et al.	2004	[23]		6 wheat ribosomal RNAs	101	Real-time	Sonde	<150	<19	n.v.
Weizen, Roggen	Sandberg et al.	2003	[24]	ja	Weizen ω -Gliadin	181	Real-time		<50	<5	100-1000
Roggen	Sandberg et al.	2003	[24]	ja	Roggen ω -Secalin	181	Real-time		<50	<5	100-1000
Gerste	Sandberg et al.	2003	[24]	ja	Hordein	164	Real-time		<50	<5	100-1000
Hafer	Sandberg et al.	2003	[24]	ja	Avenin	104	Real-time		<50	<5	100-1000
Weizen	Dahinden et al.	2001	[25]	ja	trnL	201	Endpunkt		20	n.v.	n.v.

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									pg DNA	Kopien	mg/kg
Roggen	Dahinden et al.	2001	[25]	ja	trnL	201	Endpunkt		2	n.v.	n.v.
Gerste	Dahinden et al.	2001	[25]	ja	trnL	196	Endpunkt		2	n.v.	n.v.
Weizen, Dinkel, Kamut, Roggen	Zeltner et al.	2009	[26]		HMW-Glutenin	85	Real-time	Sonde	14,6	6	2,5-5
Gerste	Zeltner et al.	2009	[26]		Hor3	80	Real-time	Sonde	125		10
Hafer	Zeltner et al.	2009	[26]		12S Speicherprotein	64	Real-time	Sonde	125	n.v.	10

Haselnuss	Holzhauser et al.	2000	[27]	ja	Cor a 1.0401 PR10	182	Endpunkt		n.v.	n.v.	<10
Haselnuss	Holzhauser et al.	2002	[28]	ja	Cor a 1.0401 PR10	152	PCR-ELISA	Post-PCR-Sonde	2-4	1-2	<4
Haselnuss	Herman et al.	2003	[29]		Nad1 (mitochondrial)	294	Endpunkt		30-300	n.v.	10
Haselnuss	Arlorio et al.	2005	[30]		Cor a1.04 gene	82	Real-time	Sonde	100	n.v.	n.v.
Haselnuss	Germiini et al.	2005	[31]		Cor a 1.0301 PR10	156	Endpunkt		5	n.v.	n.v.
Haselnuss	Rossi et al.	2006	[9]		Cor a 1.0301 PR10	156	PCR-Array	Post-PCR-Sonde	50	n.v.	n.v.
Haselnuss	Piknova et al.	2008	[32]	ja	hsp 1	100	Real-time	Sonde	13	27	100
Haselnuss	Bettazzi et al.	2008	[33]	ja	Cor a 1.04, Cor a 1.03		PCR-Array	Post-PCR-Sonde	n.v.	n.v.	n.v.
Haselnuss	Schöringhumer et al.	2009	[34]	ja	Cor a 1	109	Real-time	Sonde	50	n.v.	50
Haselnuss	D'Andrea et al.	2009	[35]	ja	Cor a 8	78	Real-time	SYBR-Green I	9,6	20	10
Haselnuss	Costa et al.	2012	[36]		HSP1	126/97	Real-time	Sonde	0,5	1	60
Haselnuss	Iniesto et al.	2013	[37]		Cor a 9,11,13	101	Real-time	Sonde	2,16	n.v.	1
Haselnuss	Lopez-Calleja et al.	2013	[38]		ITS-1	70	Real-time	Sonde, HRM	n.v.	n.v.	0,1
Haselnuss	Costa et al.	2014	[39]	ja	HSP1	126	Real-time	Sonde	1	2	50

Krebstiere

Hummer	Eischeid	2016	[40]		12S	80-90	Real-time	Sonde	n.v.	n.v.	0,1-1
Krabbe (Blaukr.)	Eischeid et al.	2013	[41]		COX-1	n.v.	Real-time	Sonde	0,005	n.v.	1
Krabbe (Blaukr.)	Eischeid et al.	2013	[41]		Cyt b	n.v.	Real-time	Sonde	0,005	n.v.	1
Krebstiere	Herrero et al.	2012	[42]		16S-RNA-Gene	205	Real-time	LNA-Sonde	125	n.v.	n.v.
Shrimps	Cao et al.	2011	[43]		16S-RNA-Gene	n.v.	Real-time	Sonde	n.v.	n.v.	500
Shrimps	Eischeid et al.	2013	[41]		16S-RNA-Gen	176	Real-time	Sonde	0,005	n.v.	1
Shrimps	Eischeid et al.	2013	[41]		12S-RNA-Gen	79	Real-time	Sonde	0,005	n.v.	1

Lupine	Demmel et al.	2008	[44]	ja	ITS 1	129	Real-time	Sonde	0,01	n.v.	0,1
Lupine	Scarafoni et al.	2009	[45]		C γ A32	160	Real-time	SYBR-Green I	7	n.v.	1000
Lupine	Gomez Galan et al.	2010	[46]	ja	α -Conglutin	153	Real-time	Sonde	500	n.v.	10
Lupine	Gomez Galan et al.	2010	[46]	ja	δ -Conglutin	150	Real-time	Sonde	500	n.v.	>10
Macadamia	Brezna et al.	2009	[47]		Vicilin-precursor	73	Real-time	Sonde	1,45	n.v.	200
Mandel	Röder et al.	2011	[48]	ja	ns-LTP	82	Real-time	Sonde	n.v.	n.v.	5

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Mandel	Costa et al.	2012	[49]		Pru du 5	90	Real-time	HRM	n.v.	n.v.	50
Mandel	Costa et al.	2013	[50]		Pru du 6	121	Real-time	Sonde	1,28	3,9	50
Mandel	Prieto et al.	2014	[51]		Pru du 1	100-103	Real-time	SYBR-Green	25	n.v.	1
Mandel	Nixon et al.	2016	[52]		ITS	Real-time	Schmelzkurve				
Paranuss	Brezna et al.	2010	[53]		11S-Globulin	65	Real-time	Sonde	10	n.v.	1000
Paranuss	Röder et al.	2010	[54]	ja	Ber e 1	117	Real-time	Sonde	n.v.	n.v.	5
Paranuss	de la Cruz et al.	2013	[55]		Ber e 1	131	Real-time	Sonde	1	n.v.	0,6
Pekann	Brezna et al.	2008	[56]		Vicilin-ähnliches Protein	89	Real-time	Sonde	1-10	1,2-12	100
Pistazie	Barbieri et al.	2006	[57]		Dehydrin	280,391	Endpunkt		n.v.	n.v.	100
Pistazie	Brezna et al.	2008	[58]		ITS	64	Real-time	Sonde	0,012	n.v.	4
Pistazie	Lopez-Calleja et al.	2014	[59]		ITS-1	72	Real-time	Sonde	n.v.	n.v.	0,1
Sellerie	Stephan et al.	2004	[8]		Api g 1 PR10	145	Real-time	Sonde	30-250	n.v.	n.v.
Sellerie	Dovicovicova et al.	2004	[60]		Mannitol-Dehydrogenasegen	279	Endpunkt		500	100	1000
Sellerie	Hupfer et al.	2007	[61]		Mannitol-Dehydrogenasegen	101	Real-time	Sonde	2	1-2	5-10
Sellerie	Mustorp et al.	2008	[62]		Mannitol-Dehydrogenasegen	151	Real-time	Sonde	n.v.	4	10
Sellerie	Fuchs et al.	2012	[63]		M6PR	77	Real-time	Sonde	10	n.v.	50
Sellerie	Zahradnik et al.	2014	[64]		Mannitol-Dehydrogenasegen		LAMP		80	24	8-500
Sellerie	Focke et al.	2013	[65]		18S/ITS-1/5.8S rDNA		LAMP				16
Senf	Mustorp et al.	2008	[62]		sinA	170-180	Real-time	Sonde	n.v.	4	50
Senf (br&schw)	Palle-Reisch et al.	2013	[66]		rev. Transkript.	76	Real-time	Sonde	0,1	n.v.	5
Senf (schwarz)	Focke et al.	2013	[65]		18S/ITS-1/5.8S rDNA		LAMP				16
Senf (weiß)	Focke et al.	2013	[65]		18S/ITS-1/5.8S rDNA		LAMP				16
Senf (weiß)	Fuchs et al.	2010	[67]		MADS D	74	Real-time	Sonde	5	n.v.	10
Sesam	Mustorp et al.	2008	[62]		2S-Albumin	64	Real-time	Sonde	0,5	n.v.	50
Sesam	Schöringhumer et al.	2007	[68]		Ses i1	117	Real-time	Sonde	50	52	500
Sesam	Brzezinski et al.	2007	[69]		2S-Albumin	66	Real-time	Sonde	5	n.v.	100
Soja	Bundesamt für Gesundheit (Bern, Schweiz)	2004	[70]	ja	Lectin	81	Real-time	Sonde	n.v.	n.v.	n.v.
Soja	James et al.	2004	[7]		trnL	343	Endpunkt		n.v.	n.v.	n.v.
Soja	Torp et al.	2006	[71]		Gly m Bd 30K	208	Endpunkt		n.v.	n.v.	100
Walnuss	Brezna et al.	2006	[72]		Jug r 2 7S Globulin	85	Real-time	Sonde	250	n.v.	100
Walnuss	Yano et al.	2007	[73]		mat K	120	Endpunkt		0,5	n.v.	10
Walnuss	Wang et al.	2009	[74]		Vicilin-like	92	Real-time	Sonde	1,25	n.v.	10

Multiplex-Methoden

Erdnuss	Köppel et al.	2010	[75]	ja	Ara d2	66	Real-time	Sonde	n.v.	n.v.	50
Haselnuss	Köppel et al.	2010	[75]	ja	Cor a 1	85	Real-time	Sonde	n.v.	n.v.	>50

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									pg DNA	Kopien	mg/kg
Sellerie	Köppel et al.	2010	[75]	ja	Mannitol-Dehydrogenase	145	Real-time	Sonde	n.v.	n.v.	n.v.
Soja	Köppel et al.	2010	[75]	ja	Lec1 Lectin	81	Real-time	Sonde	n.v.	n.v.	>50
'Ei' (Huhn)	Köppel et al.	2010	[75]	ja	transf. growth factor $\beta 3$	76	Real-time	Sonde	n.v.	n.v.	n.v.
'Milch' (Rind)	Köppel et al.	2010	[75]	ja	mitoch. trnA-Lys	83	Real-time	Sonde	n.v.	n.v.	n.v.
Mandel	Köppel et al.	2010	[75]	ja	Pru a 1	129	Real-time	Sonde	n.v.	n.v.	>50
Sesam	Köppel et al.	2010	[75]	ja	15.5 kDa oleosin mRNA	133	Real-time	Sonde	n.v.	n.v.	>50
Paranuss	Hubalkova et al.	2011	[76]		Ber e 1	173	Endpunkt		0,025		1000
Pekannuss	Hubalkova et al.	2011	[76]		Vicilin-ähnliches Protein	72	Real-time	Sonde	0,025		1000
Cashew	Köppel et al.	2012	[77]		Ana o3 2S Albumin	67	Real-time	Sonde	n.v.	n.v.	<1000
Erdnuss	Köppel et al.	2012	[77]		Ara h2	66	Real-time	Sonde	n.v.	n.v.	<1000
Haselnuss	Köppel et al.	2012	[77]		Cor a 1	85	Real-time	Sonde	n.v.	n.v.	<1000
Sellerie	Köppel et al.	2012	[77]		Mannitol-Dehydrogenase	101	Real-time	Sonde	n.v.	n.v.	<1000
Soja	Köppel et al.	2012	[77]		Lec1 Lectin	81	Real-time	Sonde	n.v.	n.v.	<1000
Senf	Köppel et al.	2012	[77]		Sin A	170-180	Real-time	Sonde	n.v.	n.v.	<1000
Milch (Rind)	Köppel et al.	2012	[77]	ja	mitoch. trnA-Lys	83	Real-time	Sonde	n.v.	n.v.	<1000
Ei (Huhn)	Köppel et al.	2012	[77]		transf. growth factor $\beta 3$	76	Real-time	Sonde	n.v.	n.v.	<1000
Mandeln	Köppel et al.	2012	[77]		Pru a 1	129	Real-time	Sonde	n.v.	n.v.	<1000
Sesam	Köppel et al.	2012	[77]		15.5 kDa oleosin mRNA	129	Real-time	Sonde	n.v.	n.v.	<1000
Pistazie	Köppel et al.	2012	[77]			77	Real-time	Sonde	n.v.	n.v.	<1000
Walnuss	Köppel et al.	2012	[77]		Jug r2 7S Globulin	88	Real-time	Sonde	n.v.	n.v.	<1000
Walnuss	Linacero et al.	2016	[78]		Jug r3	290	Real-time	Sonde	n.v.	n.v.	100
Sellerie	Fuchs et al.	2013	[79]		M6PR	77	Real-time	Sonde	10	n.v.	50
Senf	Fuchs et al.	2013	[79]		MADS D	74	Real-time	Sonde	5	n.v.	10
Soja	Luber et al.	2014	[80]		Lectin	81	Real-time	Sonde	n.v.	n.v.	8,5
Sellerie	Luber et al.	2014	[80]		Mannitol-Dehydrogenase	101	Real-time	Sonde	n.v.	n.v.	3,7
Senf weiß	Luber et al.	2014	[80]		MADS D	74	Real-time	Sonde	n.v.	n.v.	36,8
Senf br/schw	Luber et al.	2014	[80]		rev. Transkript.	76	Real-time	Sonde	n.v.	n.v.	2,6
Leinsamen	Lopez-Calleja et al.	2015	[81]		ITS-1	72	Real-time	Sonde	n.v.	n.v.	1,4
Sesam	Lopez-Calleja et al.	2015	[81]		ITS-1	72	Real-time	Sonde	n.v.	n.v.	1,3
Sellerie	Palle-Reisch et al.	2015	[82]		M6PR	77	Real-time	Sonde	n.v.	n.v.	50
Senf weiß	Palle-Reisch et al.	2015	[82]		MADS D	74	Real-time	Sonde	n.v.	n.v.	50
Senf br/schw	Palle-Reisch et al.	2015	[82]		rev. Transkript.	76	Real-time	Sonde	n.v.	n.v.	1

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