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Reference Material of
***rolling proof* 2024**
Multi-method pesticides in spinach

P2421-RMSp

Summary

Reference material P2421-RMSp is validated in the ring test P2421-RT, which is organised, performed, and evaluated according to the requirements of DIN EN ISO/IEC 17043 and the “International Harmonized Protocol”. DIN ISO 13528 is considered during the evaluation of the submitted results and during homogeneity testing. P2421-RT is part of rolling proof 2024, module vegetables and fruits.

Details related to the applied statistics are summarised in the full specification, which is provided after purchase of the reference material.

Reference material P2421-RMSp consists of 120 g of a spinach homogenate, which is spiked with 34 multi-method pesticides. 32 out of 34 pesticides are included in the specification (see table 1).

The reference material is validated in ring test P2421-RT with 7 laboratories. The spiked levels as well as the assigned values, which are calculated of the results of the participants of the ring test P2421-RT, are summarised in table 1.

The corresponding unspiked spinach homogenate (120 g) is available as blank material P2421-BLSp. The blank material is free from all spiked parameters at a level of 0.01 mg/kg (not detected).

Table 1. Spiked levels and assigned values

Parameter	Spiked level [mg/kg]	Assigned value [mg/kg]	Total number of results
2,4-DDD	0.077	0.0635	7
3-Hydroxycarbofuran	0.010	-**	6
Acibenzolar-S-methyl	0.33	0.308	7
Aldicarb sulfoxide	0.072	0.0758	7
Azinphos-methyl	0.022	0.0219	7
Azoxystrobin	0.16	0.164	7
Benalaxyl	0.018	0.0174	7
Benfluralin	0.065	0.0615	7
Bifenazate	0.051	0.0469	7
trans Chlordane	0.033	0.0285	7
Chlorfenapyr	0.073	0.0708	7
Ditalimfos*	0.019	-**	7
Ethiofencarb (sum)	0.021	-**	6
Etridiazole*	0.054	-**	7
Famoxadone	0.022	0.0209	7
Fenamiphos-sulfone	0.027	0.0274	7
Fluazifop (free acid)	0.061	0.0561	7
Fludioxonil	0.28	0.270	7
Fuberidazole	0.024	-	5
cis-Heptachlor epoxide	0.041	0.0381	7
Hexaconazole	0.025	0.0256	7
Isoprocarb	0.023	-**	6
Lufenuron	0.033	0.0345	7
Metamitron	0.15	0.140	7
Methiocarb sulfone	0.086	0.0842	7
Methomyl	0.044	0.0417	7
Mevinphos	0.045	0.0417	7
Parathion-methyl	0.026	0.0222	7
Phoxim	0.034	0.0308	7
Pyridate	0.089	-**	5
Quintozene	0.069	0.0611	7
Tecnazene	0.028	0.0271	7
TFNA (Metabolite of Flonicamid)	0.055	-**	6
Zoxamide	1.2	1.04	7

* Ditalimfos and etridazole are not specified for the reference material. A degradation was observed during stability testing.

** 3-OH-carbofuran, ethiofencarb, isoprocarb, pyridate, and TFNA are specified with respect to the accepted ranges related to the trueness criterion (70 to 120 % of the spiked level) only.