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Ring test
Multi-method pesticides
in hemp (cannabis) leaves
P2426-RT

Summary

The entire report is available to participants only.

The ring test was designed, realised, evaluated, and authorised on behalf of PROOF-ACS GmbH by

Dr. Birgit Schindler
Managing Director PROOF-ACS GmbH
Project coordinator

The report was approved by

Dr. Birgit Schindler

Participants with any comments or concerns related to this ring test are invited to contact:

PROOF-ACS GmbH
Gottlieb-Daimler-Str. 1
28237 Bremen
Phone: +49 421 388 928 50
E-mail: proof@proof-acs.de
www.proof-acs.de

The proficiency test evaluates the performances of laboratories with respect to their ability to quantify pesticides by means of common pesticide multi-residue methods in hemp leaves, a highly complex matrix. 13 laboratories across four European countries (Germany, Italy, Netherlands, and Spain) took part in the proficiency test. 11 out of 13 labs reported results and are considered for evaluation.

The test material is prepared of fresh organic hemp leaves. The hemp plants are fibre hemp with a THC content of < 0.3 %. The hemp leaves are deep frozen and homogenised with liquid nitrogen thereafter. The unspiked homogenate of the hemp leaves is tested for incurred residues and is provided as blank material upon request. The blank material is free from pesticides, which are covered by common multi-residue methods.

The raw material is spiked with 13 pesticides to prepare the test material. Neither the identity nor the number of spiked pesticides were announced in advance. The identity of the pesticides and the spiked levels are summarised in the table below.

The results are evaluated with respect to

- the correct *identification* of the spiked pesticides. Pesticides, which spiked and are not reported are considered false negative. Pesticides, which are not spiked, and which are not identified as incurred residues in advance are considered false positive.

- the *trueness* of the results. The trueness is expressed as the coverage of the spiked level in %. The coverage should be at least between 70 and 120 % of the spiked level.

- the *comparability* of the results. The evaluation of the comparability is based on the z-score model. The z-score should be at least ≤ |2|.

The results of 11 labs are considered for evaluation. A summary of the overall performance of the labs is provided in the table below.

To summarise:
- 11 out of 13 labs reported results.

- 6 out of 11 labs identified all 13 pesticides correctly, while 4 labs failed for one pesticide and 1 lab failed for two pesticides.

- Two labs reported false positive results.

- The overall performance of most of the labs is satisfying.

- 4 labs pass the comparability criterion for all 13 pesticides, while 6 labs reported 12 pesticides correctly, and 1 lab reported 9 pesticides correctly.

- 3 labs pass the trueness criterion for all 13 pesticides, while 2 labs reported 12 pesticides correctly, 3 labs reported 11 pesticides correctly, 1 lab reported 10 pesticides correctly, and 1 lab reported just 6 pesticides correctly.

Results

Parameter	Spiked level [mg/kg]	Assigned value [mg/kg]	Assigned value in % of the spiked level	No. of results	No. of results with a z-score ≤ |2|	No. of results within 70-120 % of the spiked level
Azadirachtin	0.12	0.104	86	11	11	10
Azoxystrobin	0.21	0.215	103	11	11	10
Bifenthrin	0.28	0.277	99	11	10	10
Clopyralid	0.33	0.320	97	8	7	7
Cyproconazole	0.062	0.0624	101	11	11	11
Dinotefuran	0.074	0.0764	103	11	11	10
Diuron	0.092	0.0980	107	11	11	10
Emamectin B1a	0.11	0.0890	81	10	10	8
Etoxazole	0.089	0.0975	110	11	11	9
Fludioxonil	0.052	0.0478	92	11	11	10
Piperonyl butoxide	0.65	0.617	95	11	10	10
Sedaxane	0.093	0.0915	98	9	8	8
Sulfoxaflor	0.072	0.0712	99	11	11	9