

# Ring Test

## Polar pesticides and contaminants in green tea

### P2108-RT



## Summary

The entire report is available to participants only.

Designed, realised and evaluated by

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The proficiency test evaluates the performances of laboratories with respect to their ability to quantify polar pesticides and contaminants in green tea. Fifteen laboratories across three European countries (Germany, Italy and Netherlands) took part in the proficiency test.

The test material is prepared of organic green tea. The raw material is milled in small portions in a Retsch cutting mill pulverisette 15. The resulting powder is homogenised intensively and tested for incurred residues thereafter. The raw material contains trace levels of incurred residues of anthraquinone, and biphenyl (< 0.01 mg/kg). Incurred residues were also detected in the raw material of nicotine (assigned value 0.210 mg/kg) and trimesium (assigned value 0.130 mg/kg).

The milled and homogenised raw material was provided to all participants as blank material. In order to prepare the test material, the raw material was spiked with anthraquinone, biphenyl, chlorate, perchlorate, glyphosate, AMPA, diquat, paraquat, matrine, and oxymatrine in addition to the incurred residues of nicotine and trimesium. It was up to the laboratories to quantify the full set of twelve parameters or a selection of it. The laboratories were asked analyse both materials, the test material and the blank material and to mark parameters, which they did not analyse as n.a. (not analysed).

14 out of 15 labs kept the term of submission of results, while one of the labs reported with a delay of one working day. The results of all labs are considered for evaluation.

The report contains an assessment related to

- 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 trueness criterion is applied to all parameters except nicotine and trimesium (incurred residues).
- the *comparability* of the results. The evaluation of the comparability is based on the z-score model. The z-score should be at least  $\leq |2|$ . The comparability criterion is applied to all parameters except diquat and paraquat due to the limited number of reported results.

## 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 $\leq  2 $	No. of results within 70-120 % of the spiked level
Anthraquinone	0.035	0.0355	101	12	12	12
Biphenyl	0.068	0.0703	103	12	11	11
Chlorate	0.045	0.0470	104	11	11	9
Perchlorate	0.025	0.0254	102	11	11	11
Nicotine	-*	0.210	-	13	13	Not applicable
Glyphosate	0.025	0.0260	104	10	10	10
AMPA	0.042	0.0402	96	10	10	9
Trimesium	-*	0.130	-	8	6	Not applicable
Diquat	0.055	-	-	5	Not applicable	4
Paraquat	0.11	-	-	5	Not applicable	3
Matrine	0.035	0.0352	101	8	7	7
Oxymatrine	0.045	0.0434	96	8	7	6

\* Nicotine and trimesium are incurred residues. Thus, no spiked levels are not provided.

### To summarise:

- Fifteen laboratories took part in the tests. The laboratories were free to choose if they report results related to all twelve parameters or a selection of it.
- Thirteen labs reported results related to nicotine, twelve related to anthraquinone and biphenyl, eleven labs related to chlorate and perchlorate, ten labs related to glyphosate and AMPA, eight labs related to trimesium, matrine and oxymatrine, and five labs related to diquat and paraquat.
- Comparability:  
All parameters except diquat and paraquat were evaluated with respect to the comparability criterion. The overall performance of the labs is satisfying. All labs pass the comparability criterion related to anthraquinone, chlorate, perchlorate, nicotine, glyphosate, and AMPA.  $\geq 88$  % of the labs pass the comparability criterion with respect to biphenyl, matrine, and oxymatrine, while still 75 % of the labs pass the comparability criterion related to trimesium.
- Trueness:  
All parameters except nicotine and trimesium (incurred residues) are evaluated with respect to the trueness criterion. The performance of the labs is satisfying. All labs pass the trueness criterion related to anthraquinone, perchlorate and glyphosate.  $\geq 80$  % of the labs pass the trueness criterion with respect to all other parameters except paraquat (60 % pass the trueness criterion) and oxymatrine (75 % pass the trueness criterion).