

# Validated Reference Material Pyrrolizidine alkaloids in cumin

## P2114-RMCu



- Summary -

Please note:

Reference material P2114-RMCu is a validated control material and not a certified reference material. The reference material consists of 120 g of milled cumin, which is spiked with seven pyrrolizidine alkaloids and contains incurred residues of five more PAs (see table 1). The corresponding unspiked milled cumin (100 g) is available as blank material P2114-BLCu. The blank material contains incurred residues of five pyrrolizidine alkaloids (incurred in table 1).

The reference material is validated in ring test P2114-RT with 10 laboratories. The spiked levels as well as the assigned values, which are calculated of the results of the participants of the ring test P2114-RT, are summarised in table 1.

Table 1. Spiked levels and assigned values

| Parameter                        | Spiked level [µg/kg] | Assigned value [µg/kg] | Total number of results |
|----------------------------------|----------------------|------------------------|-------------------------|
| Indicine                         | 90                   | 95.1                   | 9                       |
| Integerrimine                    | 22                   | 23.5                   | 7                       |
| Intermedine-N-oxide              | 22                   | 22.3                   | 10                      |
| Lasiocarpine                     | 39                   | 43.4*                  | 10                      |
| Retrorsine-N-oxide <sup>*4</sup> | 28                   | 32.1                   | 10                      |
| Senecionine-N-oxide              | 34                   | 32.9                   | 10                      |
| Usaramine                        | 16                   | 15.2                   | 9                       |
| Europine                         | incurred             | 14.8                   | 10                      |
| Europine-N-oxide                 | incurred             | 45.1                   | 10                      |
| Heliotrine                       | incurred             | 16.4                   | 10                      |
| Heliotrine-N-oxide               | incurred             | 36.2                   | 10                      |
| Lasiocarpine-N-oxide             | incurred             | 20.3                   | 10                      |

\* The raw material contains incurred residues of lasiocarpine (about 8.4 µg/kg). The incurred residues are considered during evaluation of the trueness criterion.