The results of a proficiency test (PT) organized jointly by The National Institute of Metrology (Inmetro/Dimci) and by the Oswaldo Cruz Foundation (Fiocruz/INCQS) of Brazil is presented. The aim of the study was the determination of pesticide residues in papaya (Carica papaya).

2 – Objectives

The objective of this PT was to provide information to the participating laboratories to help them to identify problems in the analytical procedures being used or/and to increase the confidence in the analytical results produced.

3 – Methodology

Sample preparation - Known amounts of diizinon (0.1994 mg.kg⁻¹), parathion-methyl (0.0994 mg kg⁻¹), ethion (0.3206 mg.kg⁻¹) and carbaryl (0.0281 mg.kg⁻¹), as methanol solutions, were added to 2 kg of a puree prepared from papaya samples bought in the city of Rio de Janeiro. Once fully homogenized, aliquots of the sample material was transferred to glass jars and placed in the freezer until they were sent (frozen) to the participating laboratories. Only Dr. Ehrenstorfer (FRG) certified standards were used. Eleven laboratories participated in this study.

Homogeneity and stability tests – The homogeneity (five samples) and the stability of the samples (seven aliquots, seven weeks) were tested according the ISO GUIDE 35. To the homogeneity test analysis of variance (ANOVA) was used and for the stability the ANOVA was used in conjunction with residue analysis.

4 – Reference values

Reference values for the concentrations of pesticides in the sample were assigned after analyzing statistically the analytical results supplied by the pesticide residues laboratories of the Food and Consumer Product Safety Authority (VWA/kW, NE) and of the Fiocruz/INCQS for the reference material. The medium of these results were used as the reference values (Table 2).

5 - Laboratory performance criteria

The laboratory performance criteria was evaluated according to the ABNT ISO/IEC Guia 43-1. The parameter for evaluation of the performance of an individual laboratory was the z-score

\[ z_i = \frac{Y_i - Y_{ref}}{Y_{ref} \cdot CV} \]  

(1)

Criterion for acceptability of performance:

- \( | Z | \leq 2 \) → acceptable
- \( 2 < | Z | < 3 \) → questionable
- \( Z \geq 3 \) → unacceptable