INTRODUCTION
Self-defense weapons based on Riot Control Agents (RCA) (like lachrymators) are worldwide used, but its use is limited by national legislation. In Portugal, self-defense aerosols can only use the active principle (RCA) - Capsaicin or Oleoresin Capsicum (OC; extraction product from peppers and similar species) in a concentration lower than 5 (w/v) %. The juridical consequences of using illegal self-defense weapons demand the use of validated analytical methods and the assessment of the weapons compliance with legislation considering the reliability of measurements. In Portugal, these evaluations are performed in the Scientific Police Laboratory from Polícia Judiciária, in a two steps metrological procedure, divided on a qualitative (active principle identification) and quantification analysis. The quantitative evaluation is further divided in two stages: a semi-quantitative (single-point calibration) and a quantitative analysis (multi-point calibration).

Quantitative Sample Preparation
- Unknown constitution self-defense weapon
- Sample Preparation (Extraction)
- Qualitative Analysis GC-MS
- No Capsaicin or Oleoresin Capsicum
- Determination of the purity of other standards

Calibration Standards Preparation
- Calibration Curve
- Concentration
- Area Ratio (Y)
- Concentration (μl)
- Calibration Deviation
- Calibration Deviation

Overall Analytical Method for Self-defense Weapons Constitution
- Acceptance criteria for single-point standard (first)
- Acceptance criteria for sample replicates
- Concentration
- Sample Analysis
- Replicate

Single-point Calibration
- Decision criteria for single-point calibration
- Linearities
- Calibration Curve
- Concentration
- Replicate

Multi-point Calibration
- Decision criteria for multi-point calibration
- Concentration
- Linearities
- Calibration Curve
- Concentration
- Replicate

CONCLUSIONS:
The developed analytical method and metrological models allow the reliable identification of the active principles in self-defense weapons and the quantification of capsaicin in it. This was accomplished by a detailed method validation, that allowed the determination of used qualitative and quantitative metrological criteria.

BIBLIOGRAPHY:

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