

## SHORT TERM SCIENTIFIC MISSION (STSM) SCIENTIFIC REPORT

This report is submitted for approval by the STSM applicant to the STSM coordinator

**Action number: CA16224**

**STSM title: Methods for forensic analysis of Phosphine, cyanide and glycos**

**STSM start and end date: 05/09/2021 to 25/09/2021**

**Grantee name: Brankica Kartalović**

### PURPOSE OF THE STSM:

This Short Term Scientific Mission (STSM) had as a goal the exchange of knowledge between the Vererinary Faculty from Murcia and the Scientific Veterinary Institute "Novi Sad" regarding the methods used and possibilities for the application of these methods on the database of raptors, as well as the possible compatibility improvements to allow for the exchange of data, analyses and results.

The main goal of the visit and this STSM, is to collect the data necessary to develop the method for determining of cyanides, phophides, and glycols in biological samples, but also other general aspects of risk assessment .

The STSM also has the aim to create a network between Serbia and Spain with researchers working on

- 1) toxicology area,
- 2) animal welfare,
- 3) environmental protection and sustainability in animal in rural related for future opportunities of collaborations and the submission of a multidisciplinary project on this topic

### DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS

- Welcome by the team of prof Antonio Juan García Fernández , introduction to Irene Valverde, PhD student. Introduction to the technical staff of the laboratory and the laboratory itself.

- Preparation for the oral presentation of my work at Scientific Veterinary Institute NoviSad. Introducing the professor to my work and research until now. Making a plan for future work during STSM.

Planning activities, in accordance with the objective of STSM and meetings with analysts that works in the laboratory on analyzes of different types of analytes, phosphines, glycols and cyanid that are toxic and can cause numerous effects on the health of raptors due to their exposure in those.

- Selection of methods for determining of phosphines, glycols and cyanide and making a list of chemicals, equipment, for their derivation. Making a cookbook for performing the method with basic generals that contain reagents, standards, parameters for setting the method on the appropriate instrument with mandatory citation of sources, references.

- Work in laboratory on methods for determination of emerging contaminants on raptors samples.

- Developing method for qualitative determination of phosphine using a filter paper impregnated with silver nitrate. For analysis was used a homogenized samples of raptors liver spiked with zinc phopshides. Prepared samples was analysed on LCMS/UV and LCFLD.

- Selection of methods for cyanide and glycols in biological material. Preparation of standards and matrix calibration points for determination on GC SPME.
- Preparation standards for glycols and cyanides analysis on GC SPME.
- First analyses of glycols by GC SPME.

#### **DESCRIPTION OF THE MAIN RESULTS OBTAINED**

During the STSM I obtained the following results according to the above reported aim of the STSM:

- Acquiring basic knowledge of glycols, phosphide and cyanide analysis on LCMSMS, LCMS/UV, GCMS
- This Short Term Scientific Mission, although lasting only three week, was one important step in the change of information that can improve the collection of raptors data between Scientific Veterinary Institute “Novi Sad” and the Veterinary Faculty from Murcia, and develop research methods more adequate for raptors scenario, for the detection of new and emerging risks. A wide spectrum of topics was covered, and a basis was given to the guest researcher developed methods for glycols , phosphide and cyanide analysis, but also many discussion topics were opened that could improve the future cooperation between the guest and the host institution.
- Acquiring more knowledge about the data collections and analysis of emerging contaminants in raptor samples.
- Creating a network of researchers that work on the different aspects of the topic “Analyses of glycols , phosphide and cyanide in raptors tissues and getting acquainted with the methodology of raptors toxicology analysis”.

#### **FUTURE COLLABORATIONS (if applicable)**

During the STSM in Murcia Prof. Antonio Juan García Fernández and dr Brankica Kartalović discussed the opportunity for collaboration between profesors team and Team of Scientific Veterinary Institute and tried to make a connection and to understand all way of cyanides, glycols and phosphides exposure and influence observe not only in raptors but also in water, soils, plants, food and feed.

Plan is development of methods for cyanides, glycols and phosphides analysis in Scientific Veterinary Institute and in Veterinary Faculty Murcia, in the different matrices, which would help us to connect all way of exposure and influence to animals to make a data base and to compare results.

Second plan is to publish articles about review of methods for cyanides, glycols and phosphides determinations.

The third plan is to to analysis of other emerging contaminants from birds samples that was collected in Serbia.

Looking at the possibilities of bilateral cooperation and finding ways to finance the experiments and analyzing the item is important activities for both institutions.

I approve this scientific report by Brankica Kartalovic