The use of anticoagulant rodenticides is the most common method to control rodent plagues. Due to their physicochemical characteristics and particular mechanism of action, the application of these compounds in rural areas can pose a risk of secondary poisoning for their predators. In order to evaluate the risk of these compounds for wildlife, especially raptors that feed on rodents, biomonitoring programmes are undertaken. A fast, easy and low cost technique was needed to analyse small volumes of blood samples. Therefore, three different modifications of QuEChERS methodology have been compared, and one of them selected to detect and quantify these compounds. The process prior to analysis of the extracts involves two simple steps: the sample is extracted and partitioned using an organic solvent and salt solution. The supernatant is then cleaned using a dispersive solid phase extraction (dSPE) technique. Detection and quantification of the anticoagulant rodenticides were performed by LC-MSMS on an Agilent 1100 VL Series ESI/LC/MSD, with an electrospray ionisation (ESI) source and ion trap analyser. The method finally chosen provides a 72-134% recoveries for the seven rodenticides (warfarin, coumatetralyl, brodifacoum, bromadiolone, difenacoum, chlorophacinone, diphacinone), higher than in other methods to analyse similar compounds. Sensitivity of our method is also higher than in other methods. In order to prove the utility of the technique, a total of 50 blood samples of free-living Eagle owls (Bubo bubo) were analysed.

**Keywords**
Anticoagulant rodenticides, blood, quechers, biomonitoring.