

## Heavy Metal Accumulation in Muscle Tissue of Wild *Microtus guentheri* (Danford and Alston 1880) from The Korkuteli-Antalya, Turkey

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**Aim of the study:** Different sources, including mining activities are polluting the environment by heavy metal release. The objective of this study was to determine the concentrations of seventeen heavy metals (Fe, Al, Zn, Cu, Cr, Mn, Sr, Ni, Ba, Se, V, Sn, Pb, As, Co, Mo and Cd) in muscle from wild rodent *Microtus guentheri* from natural region which is near mine and stone quarry activities in Korkuteli-Antalya. Prior to this study there was no information available on the heavy metal accumulation in muscle tissue for this species at this region. It's important to determine the heavy metal accumulation levels of muscle in *Microtus guentheri* as biomonitor.

**Material and Methods:** We worked with muscle samples of six voles specimens from one season (2016, spring) collected by means of Sherman traps, in Korkuteli-Antalya. Captured specimens were killed by cervical dislocation and muscles were immediately removed, weighed and frozen at -40 °C prior to chemical analyses in polystyrene tubes. Muscle samples were removed from deep freeze and then allowed to dissolve for a period of time at room temperature. Muscle samples were set at 80-105 °C until completely dry and fixed weight. Also, microwave method was applied for the digestion produce of samples. Samples homogenized by milling prior to analyses. Acid microwave digestion was carried out in a Berghof speedwave MWS-2 microwave. From each tissue, 0.5 g homogenates were placed in a teflon digestion vessel with mix: 8 mL 65% nitric acid (HNO<sub>3</sub>) and 2 mL 30% hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>). After digestion the samples were cooled to room temperature and diluted with ultra-pure water. Then, samples were analysed by Inductively Coupled Plasma-Optical Emission Spectrometer (ICP-EOS) For control purposes, the same procedures were carried out for a blind sample on the same conditions. The concentrations of heavy metals were expressed for the muscle samples as milligrams per kilogram (ppm) for dry weight.

**Results:** From the final data, descriptive statistical characteristics were calculated (mean, standard error) for muscle tissues of *M. guentheri*. The mean concentrations of the metals accumulated in muscle samples of *M. guentheri* as follows (M±Se, n=6): Fe: 268.58±54.14, Al: 226.82±97.45, Zn: 67.60±9.11, Cu: 8.56±0.12, Cr: 7.19±1.43, Mn: 5.97±1.42, Sr: 2.73±0.46, Ni: 1.27±0.49, Ba: 0.96±0.22, Se: 0.54±0.05, V: 0.52±0.17, Sn: 0.46±0.11, Pb: 0.36±0.08, As: 0.23±0.06, Co: 0.21±0.08, Mo: 0.17±0.03, Cd: 0.001±0.0008 ppm. The order of mean concentration of the heavy metals in samples was Fe>Al>Zn>Cu>Cr>Mn>Sr>Ni>Ba>Se>V>Sn>Pb>As>Co>Mo>Cd. According to this data; The toxic heavy metal pollution began at the vicinity of Korkuteli. Case, is thought to be due to mine sources, like marble and stone quarries and maybe agricultural activities.

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