Formalin versus native-Iron and copper concentrations of differentially treated liver tissues

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Introduction:
- Analysis of organ tissue is often used in clinical medicine for diagnosis of malnutrition or toxicosis (e.g. iron storage disease in exotic birds).
- Usually the tissues are either directly analysed, frozen or placed in formalin for further conservation.

Aim: Comparison of the iron (Fe) and copper (Cu) content of liver samples conserved in different ways, in order to find out whether formalin treated can be directly compared to frozen tissues.

Materials and Methods:
- Liver samples (app. 1.5 x 1.5 cm) of domestic pig (n=4), chicken (n=4) and cattle (n=5) were stored both frozen and in formalin (6%) for one week.
- Samples were freeze dried and Fe and Cu content were analyzed by atomic absorption spectrometry.
- Statistics: paired t-test, one-way ANOVA and Sidak post hoc test, linear regression analysis.

Results and Discussion:
- Formalin storage obliterates differences in DM content.
- Differences between native and formalin mineral data are significant in many cases.
- However, the species ranking remains the same and linear regression showed (tab. 1) that for Fe and Cu the discrepancy between the values, even if significant, is not biologically relevant.
- Mineral concentrations are typical for each species.

Conclusions:
- One should keep in mind the differences found between formalized tissues and frozen tissue, at least for Cu and Fe contents.
- When the exact mineral amounts are relevant, uniform samples should be used.
- For questions in which the order of magnitude is relevant formalized tissue samples can be used.