Freeze-thaw cycle effects on salivary cortisol

Since saliva sample collection is easy and can allow information to be gathered in all manner of places and situations, it is likely that in some cases the participant will not have immediate access to a freezer or refrigerator. Furthermore, the participant may not be able to send the samples to the research facility on dry ice. In these situations, the samples are not kept at optimum temperatures and they are likely to be exposed to unrecorded freeze-thaw cycles in transit to the Analysis and Conservatory Laboratory.

To determine the effects that the multiple freeze-thaw sequence would have on the final result of the salivary cortisol assay, analyses were run in-house at the Analysis and Conservation Laboratory.

Method

- Eight saliva samples were collected from staff at the Fernand Seguin Research Centre. Each staff member provided one saliva sample that was then frozen immediately.
- Over the following weeks, the samples were removed from the freezer to defrost. They were then assayed on our regular cortisol Enzyme-immune assay plates, and then re-frozen.
- The samples were assayed 5 times in this manner, which would be more freeze-thaw cycles than an average sample would usually be put through.

Results

The results show that cortisol is stable over a number of freeze-thaw cycles.

The results of the analyses are shown in Figures 1 & 2 below.

- Figure 1 shows that the cortisol results for each sample are similar over the 5 assay runs suggesting that the cortisol in saliva is stable over a number of freeze thaw sequences.
- Figure 2, shows the stability and consistency of cortisol for each of the 8 participants, across the freeze-thaw-cycle over 5 assay plates.

Figure 1

Sample	Assay 1	Assay 2	Assay 3	Assay 4	Assay 5
1	0.358	0.325	0.366	0.330	0.335
2	0.143	0.144	0.163	0.146	0.137
3	0.213	0.231	0.259	0.235	0.229
4	0.203	0.192	0.223	0.201	0.208
5	0.272	0.246	0.252	0.222	0.244
6	0.103	0.109	0.117	0.108	0.100
7	0.552	0.593	0.633	0.606	0.496
8	0.243	0.225	0.248	0.216	0.199

Figure 2