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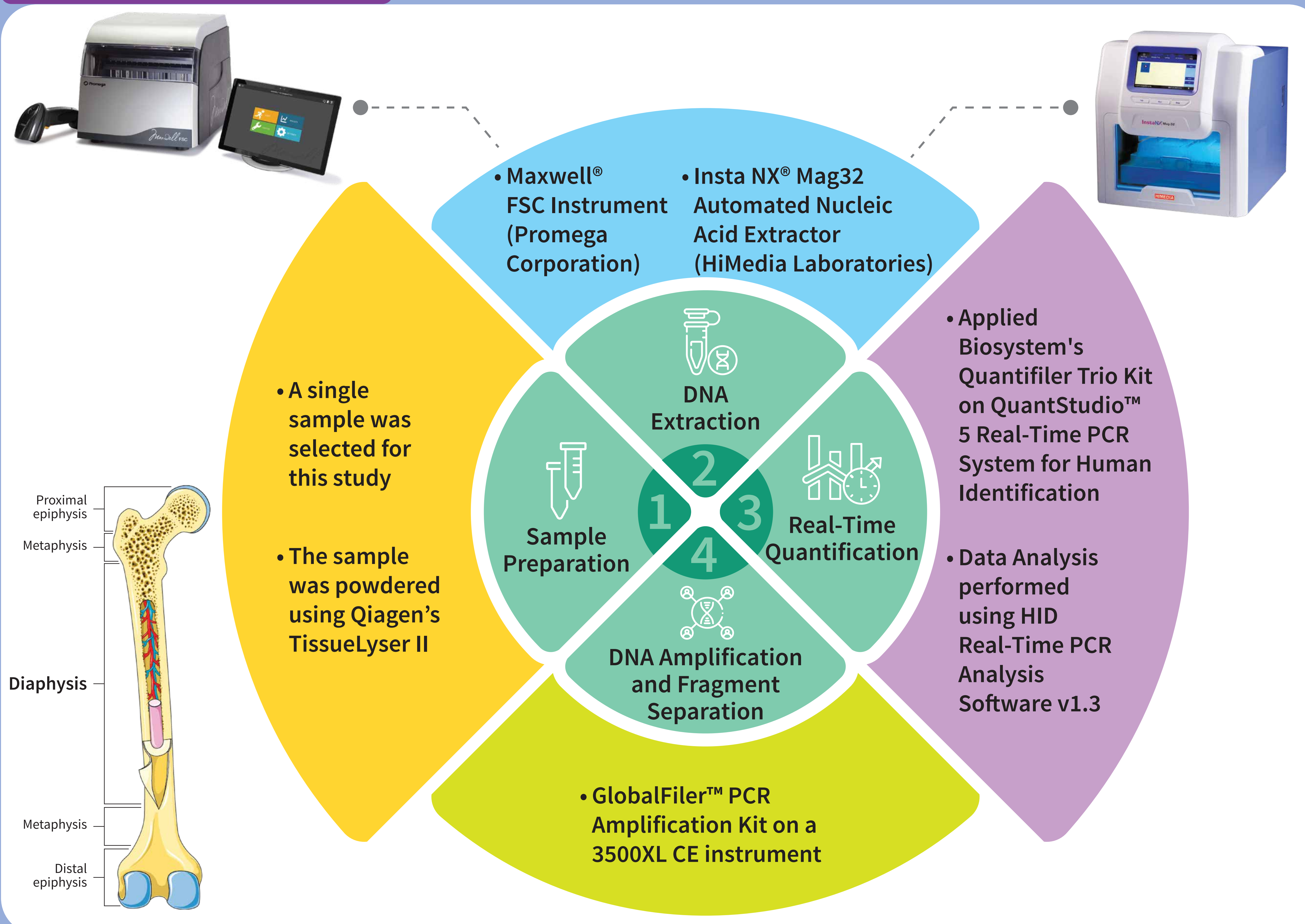
Introduction

Bone and dental remains often represent the best resource for victim identification as DNA is preserved better in the calcified matrix. However, DNA-profiling from bones is a time-consuming process. Current sampling strategy for laboratories typing bones for human identification include samples obtained from femur, tooth, and temporal bone. Latest studies suggest that the small bones of the hands and feet were very similar or even better in DNA yield. These bones can be easily sampled with a disposable scalpel and thus reduce potential DNA contamination.

Objective

The objective of the study was to compare two automated nucleic acid extraction systems for DNA recovery and STR profiles from two anatomical locations in a single bone sample. The two locations include metaphysis and diaphysis (shaft) region.

Materials and Methods



Results

Figure 1 Average concentration of small autosomal target quantified from bone sample

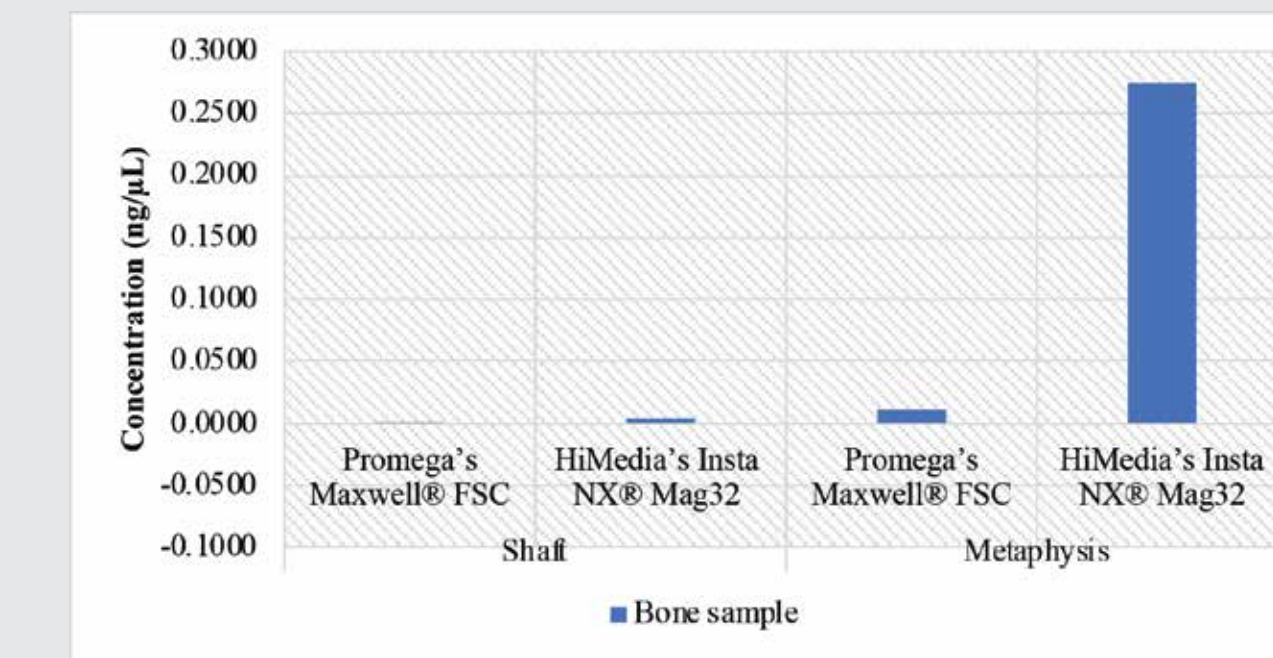


Figure 2 Average concentration of large autosomal target quantified from bone sample

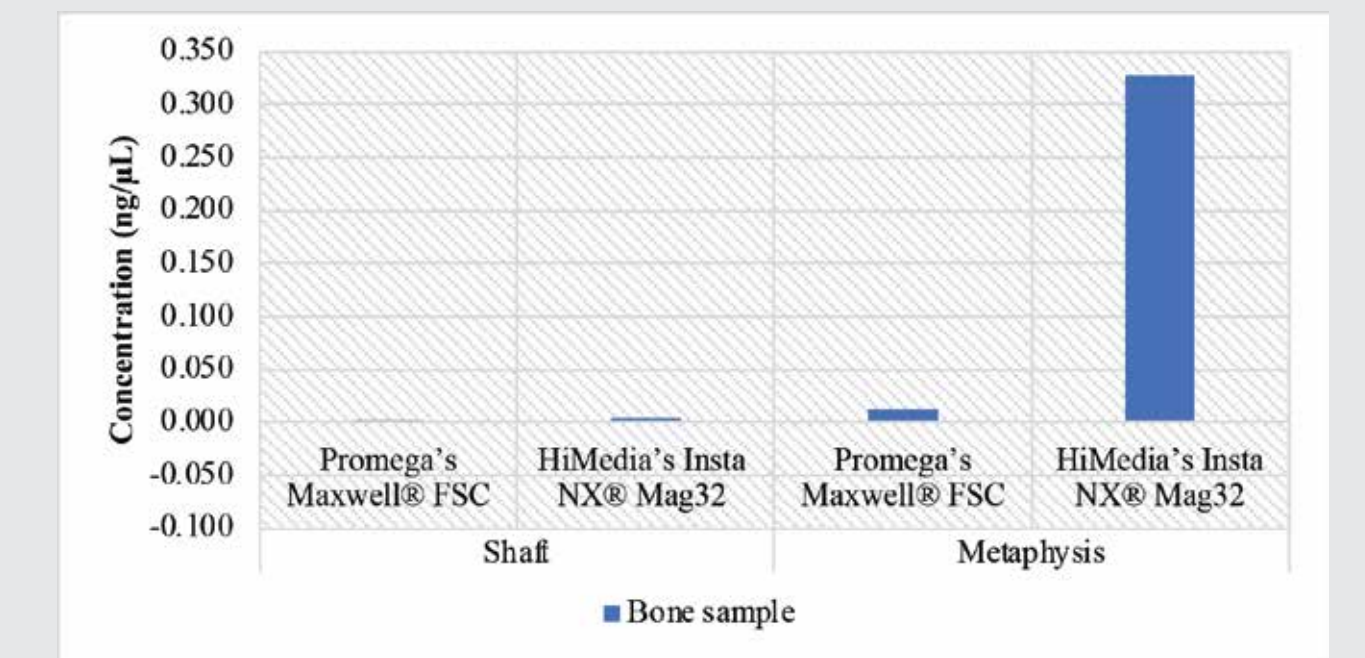


Figure 3 Average concentration of male target quantified from bone sample

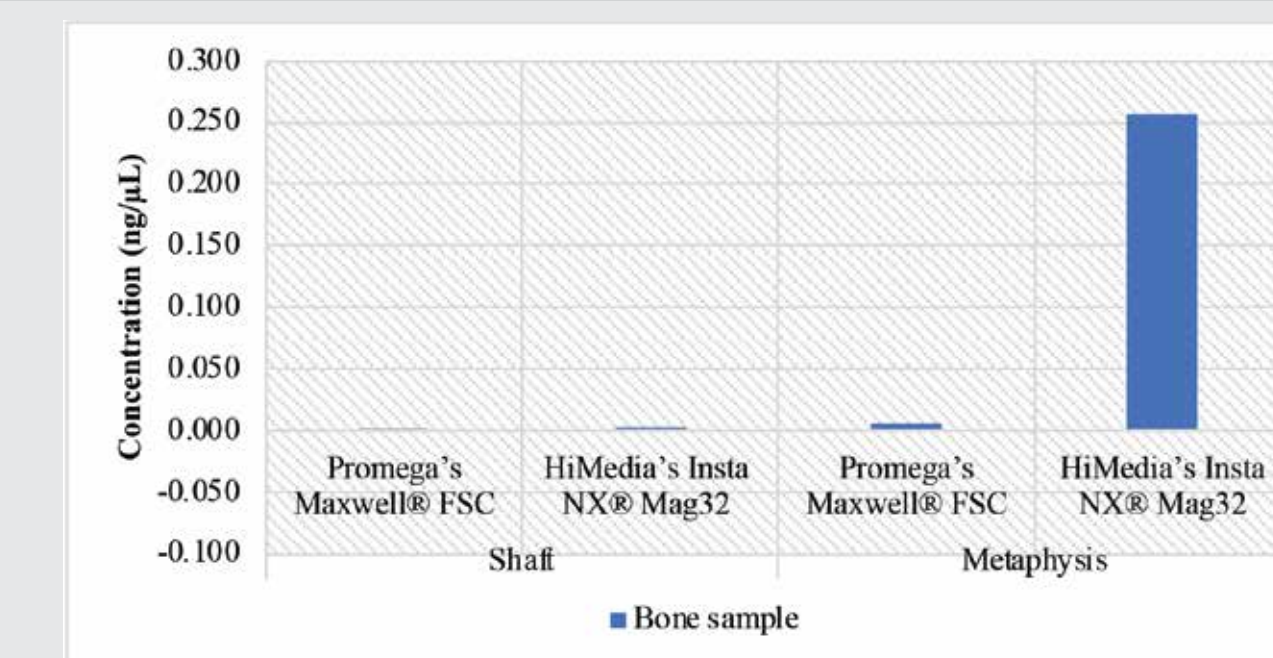


Figure 4 Degradation index calculated from bone sample

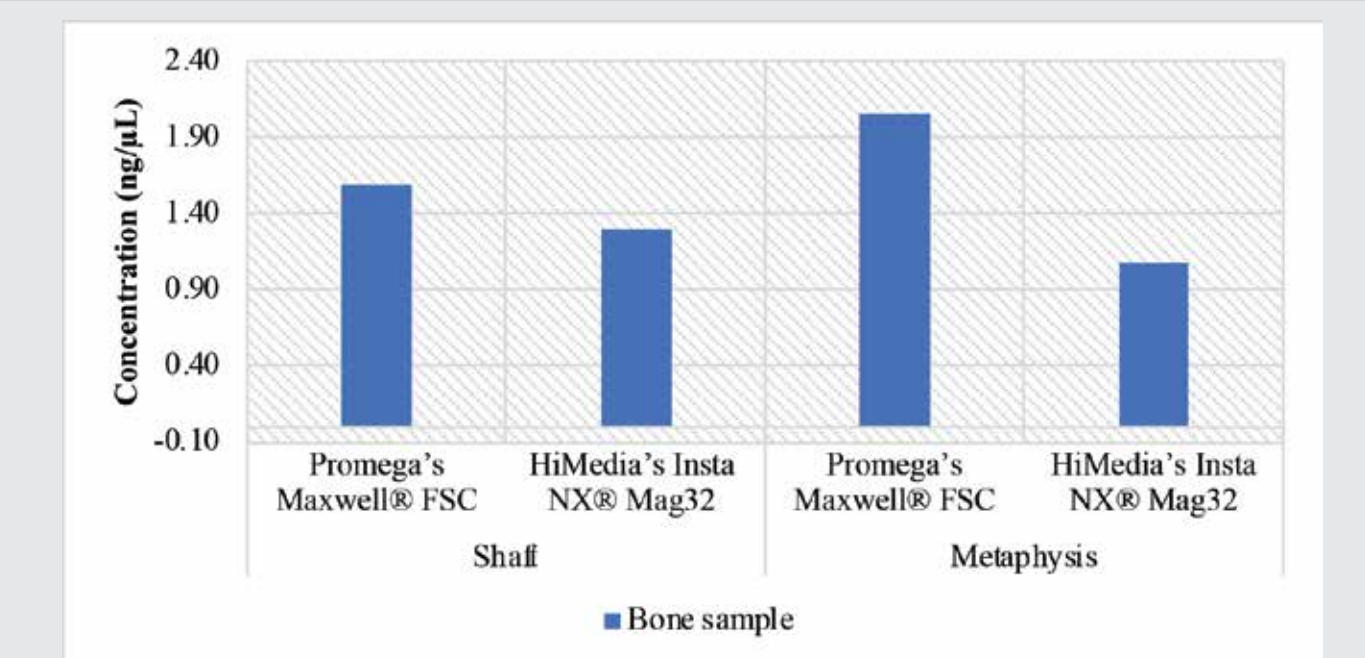
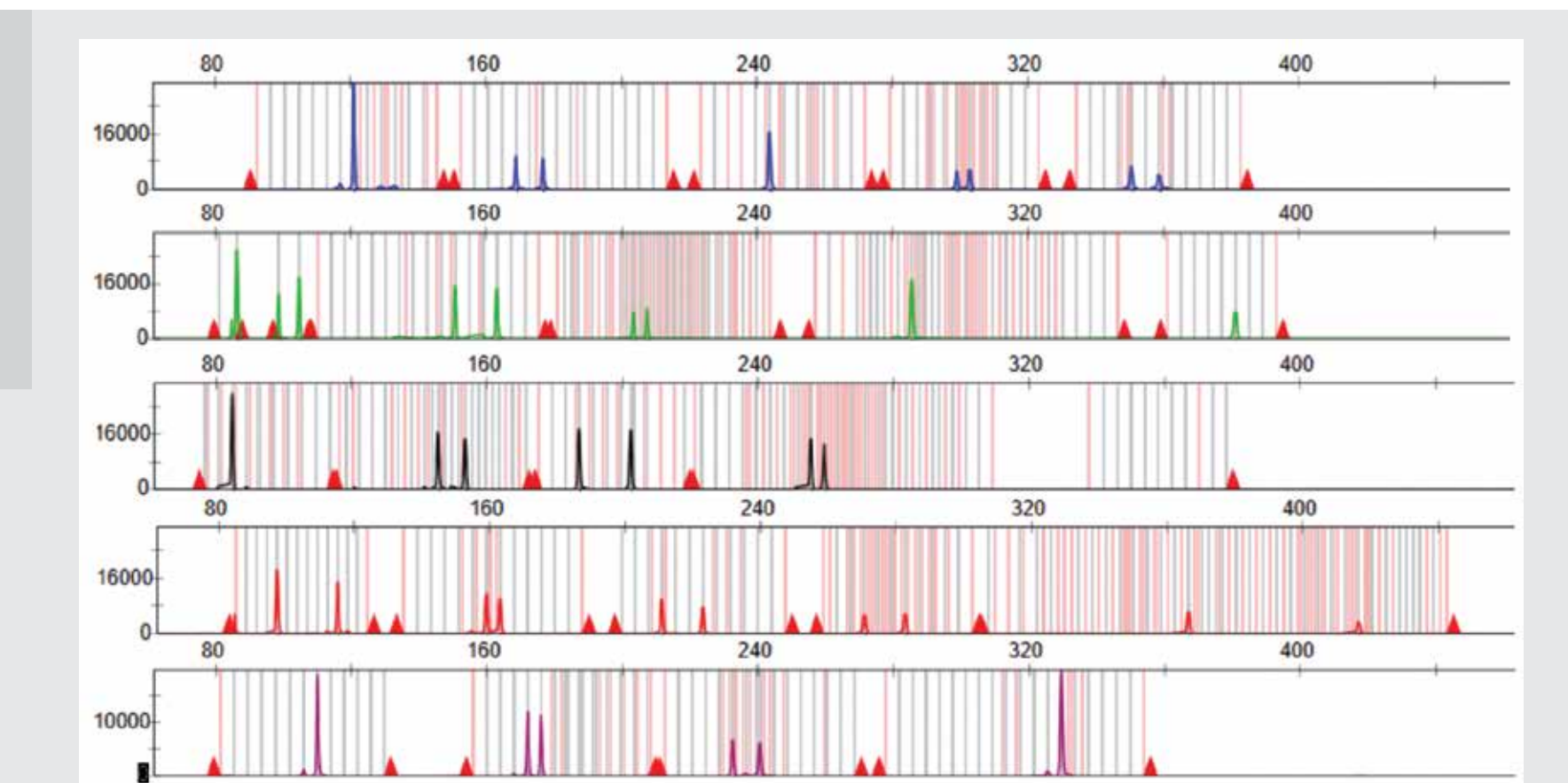


Figure 5 Amplification of bone DNA from the metaphysis region using HiMedia's Insta NX® Mag32



Conclusion

- The bone DNA extracted from the metaphysis region resulted in a significantly higher DNA recovery than the diaphysis (shaft) region.
- Complete STR DNA profile was yielded from the metaphysis region (24/24).
- The DNA concentration obtained from HiMedia's Insta NX® Mag32 Automated Nucleic Acid Extractor was higher than Promega's Maxwell® FSC Instrument.
- The degradation index of the samples extracted from the HiMedia's Insta NX® Mag32 Automated Nucleic Acid Extractor was lower than Promega's Maxwell® FSC Instrument.
- This indicates that the DNA was extracted with high purity from HiMedia's Insta NX® Mag32 Automated Nucleic Acid Extractor.
- The results showed that the HiMedia's Insta NX® Mag32 Automated Nucleic Acid Extractor provided the highest yield and purity of DNA from bone sample and that the system is suitable for use within a forensic laboratory for bone DNA extraction.

References

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