ABSTRACT

The present study deals with the comparison of different methods of DNA extraction from human bones and short tandem repeat (STR) typing by capillary electrophoresis. Ten femoral bones belonging to different cadavers were chosen, after cleaning, bone powder was made using scalpel and filer. The bone powder was subjected to DNA extraction by five different methods including phenol chloroform extraction (PCE), CTAB+isoamyl alcohol extraction, total demineralization (TD), extraction from crystal aggregates (CE) and a modified spin column extraction method. Later on, DNA quantity was determined by real time PCR and PCE method gave best results (average 20.07 ng/μl) as compared to other methods. In real time PCR, R^2 value was 0.999. DNA was amplified by PCR (PCR holding time was 11 min at 95°C, first cycle run at 94°C for 1 min, second at 59°C for 1 min, third cycle at 72°C for 1 min followed by holding at 60°C for 60 min and at 25°C infinity) and quantified by product gel. In gel, the best results were shown by DNA volume extracted by PCE method. According to gel band width, DNA (isolated by PCE method) was pooled in plate and subjected to capillary electrophoresis along with ladder, GS 500 (size standard), reagent blank and positive control. DNA profiles in the form of peaks were obtained after analysis by software (Applied Biosystems, GeneMapper ID v3.2). Full STR profiles were obtained from DNA that was extracted by PCE method, which indicated that PCE method is an optimal method of choice when femur bone is a source of DNA under applied PCR conditions.