

CRITICAL FACTORS IN THE APPLICATION OF THE POWERPLEX® 16 HS KIT

M.Al. Salih and Kevin R. Condel

DNA Reference Laboratory, 7271 Wurzbach Rd. Ste. 125, San Antonio, Texas 78240

Forensic samples are often limited in quantity and quality. To better amplify these samples for DNA detection and profiling, Promega Corporation (Madison, WI) has recently introduced the PowerPlex® 16 HS kit to forensic laboratories. The PowerPlex® 16 HS kit has the advantages of increased inhibitor tolerance and sensitivity as compared to previous generation kits. However, the ability of PowerPlex® 16 HS kit to amplify extracted DNA that contains low DNA template is not apparent under the normal assay testing conditions. Replacement of the water component with extracted DNA (up to 17.5 ul) exerted a significant increase in the level of sensitivity (32X) compared to levels obtained from regular PowerPlex® 16. In contrast, PowerPlex® 16 HS produced a significant increase in peak heights compared to regular PowerPlex® 16, which requires a re-evaluation of the homozygous threshold level of the kit. In a non-probative case study, the PowerPlex® 16 HS kit successfully amplified very low template DNA (7.813 pg/ul) which otherwise could have produced partial or no profile at all using other kits.