Identification of food bacterial pathogens using nanoparticle probes and mid-infrared chemical imaging for DNA microarray detection

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For the first time, a novel application of mid-infrared chemical imaging (IRCI) for fluorophore-free detection and identification of several pathogenic bacteria is demonstrated in this work. Traditional fluorescence probe labeling (with Cy3 or Cy5 for example) in DNA microarray was replaced with PCR-amplified biotinlayted targets hybridized to microarray probes which were treated with streptavidin-gold nanoparticles followed by silver enhancement. This modification has the potential to expand the implementation of DNA microarray technology in laboratories involved in the detection of gene identification as well as gene expression off different pathogenic bacteria.

References

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