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Molecular Study on Genetic Identification of Different Animal Species

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Abstract:

Spectacular development of molecular science in the field of genetics provides new era of genomics. Genetic variation among different animal species and molecular markers provide a powerful tool today in all aspects at the level of DNA. There are various molecular markers are used which have different principles, methodologies and applications. This study focused on the efficiency of mitochondrial molecular markers and the applicability of PCR-RFLP methodology in the genetic variance in different animal species. Animal species held in this study were beef, donkey, dog, poultry meat, and mechanical deboned meat. Using the conventional PCR technique amplifying the required region of mitochondrial genes, 12S rRNA gene, 16S rRNA, and cytochrome - *b* gene using pairs of universal primer. Restriction fragment length polymorphism subsequently digests the amplified PCR product using two restriction endonucleases (*AluI and HinfI*). All species and mixtures at different ratios could be discriminated using the two restriction enzymes giving rise to an identifiable banding pattern on an agarose gel. The cooking process for different ratios mixtures mostly affected the banding number obviously in 12S rRNA and cytochrome - *b* genes either by increasing or decreasing. Results of this study suggested that the 12S rRNA, 16S rRNA genes, and cytochrome - *b* genes of the mitochondrial genome using PCR-RFLP method suited for identification of meat tissues mixtures under various processing conditions and different animal species.

Key words: 12S rRNA, 16S rRNA, Cyto - *b*, MDM, cooked meat, PCR-RFLP, meat mixture.

Dedication

Thanks to Almighty ALLAH for giving me strength and ability to understand, learn and complete this theses.

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I dedicate this achievement to my beloved father & mother, ALLAH bless their souls who with love and effort have accompanied me in this process, without hesitating at any moment of seeing my dreams come true, which are also their dreams.

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"Whoever does not thank people does not thank ALLAH"

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