



## Detection of adulteration and identification of meat and milk species using molecular genetic techniques

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### Abstract

Animal meat and milk products are very important in human diet and the quality measurement depends on the ability to satisfy human requirements of proteins, fat, vitamins and minerals, which, of course, vary from animal to another. For the fast, specific and sensitive identification or determination of goat, dog, cat, buffalo, cattle, sheep, camel, donkey, horse and pig meat and milk, species-specific PCR and PCR-RFLP techniques were developed. Where, DNA from small amount of muscles (0.05 gm) and very little of fresh milk (100  $\mu$ l) was extracted to amplify the gene encoding species-specific repeat (SSR) region and the mitochondrial DNA segment (cytochrome-b gene). The results of PCR amplification were 855 bp in length in goat, 808 bp in dog, 672 bp in cat, 603 bp in both buffalo and cattle, 374 bp in sheep, 300 bp in camel, 221 bp in both donkey and horse, and  $\leq 100$  bp in pig. To differentiate between buffalo and cattle meat and milk, as well donkey and horse meat and milk, cytochrome-b gene in the four species was amplified (359 bp) and digested with restriction enzymes. By TaqI restriction enzyme, two different fragments (191 bp and 168 bp) were generated in buffalo, whereas no fragments were obtained in cattle. With AluI restriction enzyme, three different patterns were generated in horse (189 bp, 96 bp and 74 bp), while in donkey no digestion was obtained. The proposed PCR and PCR-RFLP assays represent a rapid and sensitive method applicable to the detection and authentication of meat and milk species-specific.



### Biography:

Salah Abdel-Rahman has completed his PhD at the age of 35 years from Humboldt University, Berlin, Germany. He is the Head of Nucleic Acid Research Department, Genetic Engineering and Biotechnology Research Institute, City of Scientific Research and Technological Applications, Alexandria, Egypt. He has published more than 30 papers in reputed journals and has been serving as an editorial board member of repute.



### Speaker Publications:

1. Swelim, Hamdy & Mansour, Omnia & Abdel-Rahman, Salah & Shwaireb, Mohamed & Kazem, Amani. (2018). Relative Transcription Expression Level of SIRT1, SIRT2 and SIRT3 in Correlation to the Expression of a Set of Selected Cancer Related Genes in Human Breast Cancer. OnLine Journal of Biological Sciences. 18. 147-157. 10.3844/ojbsci.2018.147.157.
2. Koutb, Fayed & Abdel-Rahman, Salah & Hassouna, Ehab & Haggag, Amany. (2020). Association of C-myc and p53 Gene Expression and Polymorphisms with Hepatitis C (HCV) Chronic Infection, Cirrhosis and Hepatocellular Carcinoma (HCC) Stages in Egypt Association of C-myc and p53 Gene Expression and Polymorphisms with Hepatitis C (HCV) Chronic Infection, Cirrhosis and Hepatocellular Carcinoma (HCC) Stages in Egypt.
3. Abdel-Rahman, Salah & Mustafa, Yehia & Errasool, Hagar & Heikal, Hanim & Elmaghraby, Ayaat. (2019). FSHR (exon 10) gene polymorphisms and its association with fertility trait in Egyptian Ossimi sheep. Biotechnology in Animal Husbandry. 35. 127-140. 10.2298/BAH1902127A.
4. Swelim, Hamdy & Mansour, Omnia & Abdel-Rahman, Salah & Shwaireb, Mohamed & Kazem, Amani. (2018). Relative Transcription Expression Level of SIRT1, SIRT2 and SIRT3 in Correlation to the Expression of a Set of Selected Cancer Related Genes in Human Breast Cancer. OnLine Journal of Biological Sciences. 18. 147-157. 10.3844/ojbsci.2018.147.157.

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