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A novel DNA marker for the quantitative detection of Malayan box turtle (*Cuora amboinensis*) materials in commercial food chain and Chinese herbal food products

Asing and Eaqub Ali

University of Malaya, Malaysia

Malayan box turtle (*Cuora amboinensis*) (MBT) is a protected in prohibited species in Muslim foods, herbal items and medicines in Malaysia. However, this species highly exploited through illicit process for food and herbal medicines. To control the illegal trade, there is a need of a reliable method for the quantitative tracing of turtle materials in food chain and medicines. For the first time, we developed a short length DNA marker for the quantitative detection of MBT tissues by SYBR green real-time PCR systems. PCR amplified target was further validated by sequencing and restriction digestion with BfaI endonuclease. The MBT target was further quantified by a duplex SYBR green real time PCR system consisting of MBT target and internal (eukaryotic) positive control. The quantification limit (ng) was 0.00001 for pure meat, 0.0030 ± 0.00001 for binary mixtures, 0.0021 ± 0.00008 for meatball, 0.0042 ± 0.0037 burger and 0.0013 ± 0.00006 frankfurter products. Finally, a total of 183 commercial meat products were screened but no turtle contamination was found. Finally, 120 Chinese herbal food samples were surveyed by SYBR Green PCR and 23% of them were found to be MBT-positive (0.00157 to 0.0612 ng/ μ L), respectively. These authentications provided better security, firstly, through short-length biomarker target which offer extraordinary stability and sensitivity. Thus, the novel assay demonstrated sufficient merit for use in any forensic and/or archaeological authentication of MBT, even under a state of decomposition.

Biography

Asing has completed his PhD in Biology and Biochemistry under the supervisor of Md. Eaqub Ali, Associate Professor, at Nanotechnology and Catalysis Research Centre, University of Malaya, Kuala Lumpur, Malaysia. He has obtained his MS degree in Biochemistry and Molecular Biology under the supervisor of Professor Dwaipayan Sikdar, University of Chittagong, Bangladesh. His research interests are on DNA markers development, Biochemistry, Molecular Biology, Food Science and Pharmaceutical Science. He has contributed and published 17 research articles in top rating research journals. He has 5 conference proceedings and presented oral (3) and poster (2) in prestigious international conferences in Malaysia, Indonesia, Thailand and Singapore respectively. Before being a PhD student, he had worked as research assistant, quality control office in leading Biochemistry and Molecular Biology research laboratory and pharmaceuticals industry in Bangladesh.

asing95bio@gmail.com

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