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## Development of a novel DNA bio-marker for the qualitative and quantitative detection of malayan box turtle (*Cuora amboinensis*) material in traditional chinese medicines

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Malayan box turtle (*Cuora amboinensis*) (MBT) is a protected species in Malaysia since 2005 and prohibited (haram) animal species in Muslim foods and medicines. The widespread availability of commercial traditional Chinese medicines across Malaysia may offer the opportunity of turtle product trafficking under the covert of halal brands, needing to develop a convenient and reliable method both for the qualitative and quantitative tracing of turtle materials in medicines. Several polymerase chain reaction (PCR) assays have been proposed for the detection of MBT species under various routes but they are based on long-length targets which break down under the state of decomposition, making them unsuitable for the forensic detection in medicines and other potential routes. To overcome this knowledge gap, for the first time, we developed a short length DNA target for the quantitative detection of MBT tissues by SYBR green real-time PCR systems. The assay specificity was checked against 20 different species and DNA biomarker stability was tested under various meat tissue processing conditions, including boiling, autoclaving and micro oven heating under pure and admixed matrices. The limit of detection (LOD) of the SYBR green duplex real time PCR system was 0.00001 ng DNA and

0.001% (w/w) MBT meat under mixed matrices. Finally, 120 traditional Chinese medicines samples were surveyed by SYBR green duplex real time PCR system and 23% of them were found to be MBT-positive (0.00157 to 0.0612 ng/ $\mu$ L), respectively. Thus the methods were suitable for real-world application and they confirmed the widespread speculation that MBT materials are widely used in Chinese medicines and herbal medicines as well as this technique could be applied medical diagnosis science.

### Speaker Biography

Asing has completed his PhD in Biology and Biochemistry under the supervisor of Md. Equb 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.

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