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Regulation of melanin synthesis by key genes involved in melanogenesis pathway in *Pelodiscus sinensis*

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This work was carried out to investigate the mechanism of melanin synthesis in Chinese soft-shelled turtle, *Pelodiscus sinensis*. About 1500 eggs of Chinese soft-shelled turtle were collected from Dafan turtle breeding aqua farm in Shaoxing, Zhejiang province, China. Samples were well stored in a 31°C incubator with 85% humidity until use. To overexpress target genes, lentivirus (LV) vector harbouring microphthalmia-associated transcription factor (MITF) or tyrosinase (TYR) were injected into embryos of stage 15, respectively. Two weeks later, embryos and tissues were sampled for further study. Embryo morphology, melanin pigmentation, as well as gene expression pattern were determined. As a result, we found that both MITF and TYR showed negligible expression before stage 16 in wild type *P. sinensis*, but increased rapidly after stage 18 and increased continuously along with the embryo development. Determination of tissue distribution of these two genes revealed that both MITF and TYR highly expressed in carapace, limbs and eyes, suggesting high melanin accumulation in these tissues in adult turtles. Compared with that of wild type, haematoxylin-eosin (HE) staining of carapace showed that transient overexpression of MITF or TYR probably increased melanin pigmentation in Chinese soft-shelled turtles. Thus, it is speculated that both MITF and TYR play key roles in melanogenesis in *P. sinensis* and further work is required to unravel the mechanism.

Biography

Qian Wang got his PhD degree in Zhejiang University (China) in 2012, majored in animal nutrition and feed science. He has been working on protein engineering of feed enzymes to improve catalytic activities and properties by using site-directed mutation and directed evolution. After that, he joined Temasek Lifesciences Laboratory (Singapore) and worked as post-doctoral fellow. His work mainly focused on metabolic engineering of secondary metabolites especially terpene biosynthesis in plants. In 2015, he joined Zhejiang Wanli University, and worked in melanin synthesis in Chinese soft-shell turtle.

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