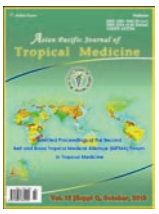

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Screening and bioinformatics analysis of specific microRNAs in testes of rats exposed to cigarette smoke

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Objective: To identify effects of cigarette smoke on the male reproductive capacity and to explore the miRNA expression in the testes after cigarette smoke exposure.

Methods: Eighty male rats were conducted by factorial analysis of variance designed for cigarette exposure. A microarray was employed to detect the differential expression of miRNA in the testis tissue of smoke-exposed rats.

Results: Four miRNAs (miR-138-5p, miR-181d-5p, miR-19a-3p, and miR-3588) were significantly downregulated and one miRNA (miR-155-5p) was upregulated in the testes of smoke-exposed rats compared with control rats. This result was further confirmed by a quantitative RT-PCR assay, and pathological changes were observed in the testes. Bioinformatics analysis showed that the predicted target genes were closely related to the regulation of the apoptosis pathway.

Conclusions: miRNA may play an important role in the smoke-exposure-induced testicular toxicity of male rats.

Keywords: Cigarette smoke; Rat; Testis; microRNA; Testicular toxicity

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