



Tristetraprolin: a novel mediator of the anticancer properties of resveratrol

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ABSTRACT. Resveratrol is a natural compound that exhibits anticancer properties. Previous studies have proved that it can inhibit the proliferation of breast cancer cell lines and upregulate some cytokines such as cyclooxygenase-2 (COX-2) and vascular endothelial growth factor (VEGF). The initiation and progression of cancer are associated with the abnormal expression of multiple cytokines. Tristetraprolin (TTP), an mRNA-binding protein, is one of the key proteins that participate in regulating cytokine expression. Two different proliferation assays on MCF-7 cells showed that the cell proliferation rate significantly reduced following treatment with resveratrol. Most importantly, we found that resveratrol promoted TTP expression at both the mRNA and protein level in a dose- and time-dependent manner. In addition, the expression of COX-2 and VEGF were significantly suppressed by resveratrol while that of inducible nitric oxide synthase (iNOS) was upregulated. Lastly, the effects of resveratrol on both MCF-7 proliferation and expression of COX-2, VEGF, and iNOS were significantly inhibited by TTP knockdown, indicating that TTP mediates the anticancer properties of resveratrol. In summary, we conclude that resveratrol inhibits the proliferation of MCF-7 cells by

TTP upregulation, which is associated with downregulation of COX-2 and VEGF and upregulation of iNOS.

Key words: Breast cancer; Resveratrol; Tristetraprolin; Proliferation