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Secretion of active tumor necrosis factor-α from smooth muscle cell over-expressing FADD

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This study investigated functional activity of tumor necrosis factor (TNF)-α secreted from smooth muscle cell (SMC) destined for death by expressing Fas associated death domain containing protein (FADD) (FAD-SMC) when the cells are grown without tetracycline in culture medium. In the absence of tetracycline the SMC secreted approximately 1000 pg/ml TNF-α, whereas hardly detectable amount of the cytokine existed in the presence of tetracycline. The culture medium collected from the FADD-SMC grown in the absence of tetracycline increased phosphorylated form of p38 MAPK and up-regulated matrix metalloproteinase 9 (MMP-9) activity. However, MMP-2 activity was not changed in response to the medium. The medium collected without tetracycline also increased death of normal rat SMC. Depletion of TNF-α with the soluble TNF receptor (sTNFR) inhibited the phosphorylation of p38 MAPK, the up-regulation of MMP-9 and the death activity of the medium collected from FADD-SMC in the absence of tetracycline. These results indicate that TNF-α secreted from SMC undergoing death is biologically active and can affect cellular function.

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Reservoirs and microbiological water qualities in a drinking water distribution system

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This study aimed to determine the effect of reservoirs on water quality in a drinking water distribution system (total length 14 km). Raw water, disinfected water, and water samples from the distribution system were subjected to physicochemical and microbiological analyses. Water samples had passed through a reservoir had (i) a higher concentration of heterotrophic bacteria, and (ii) a higher rate of colony formation and 10 times as many bacteria on selective media when compared to tap samples taken at similar distances from the water treatment plant. Coliforms and opportunistic pathogenic bacteria such as *Pseudomonas aeruginosa* were identified from the water in reservoirs althougn it was safe based on m-Endo agar. This study represented that storage reservoirs are locations lowering microbiological water quality in the drinking water distribution system and other treatment would be required for water quality.