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Resumo	Chronic inflammation resulting from *Helicobacter pylori* (*H. pylori*) infection, the major risk factor for gastric cancer, results in increased release of reactive oxygen species (ROS), promoting oxidative stress and DNA damage. APE1 endonuclease, a key component of the base excision repair (BER) pathway, is responsible for the repair of damage induced by ROS. However, the *APE1* gene and other DNA damage response (DDR) genes are still poorly understood in gastric cancer. Thus, we aimed to investigate whether the silencing of *APE1* by shRNA can interfere with the survival of AGS gastric cancer cells after treatment with hydrogen peroxide (H_2O_2) and/or *H. pylori* extract (HPE) and its relation with the expression of DDR genes (*ATM*, *ATR*, and *H2AX*) and miRNAs that target DDR genes. In the AGS cells expressing *APE1,* isolated or combined treatment with H_2O_2 and HPE promoted a slight increase in the cell proliferation and increased the levels of intracellular ROS and DNA double strand breaks (DSBs) indicated by ©H2AX foci, a reduction in the proportion of cells in the G0/G1 phase and an increase in the initial apoptosis rate. Moreover, upregulation of *APE1, ATR,* miR-15a, miR-21, miR-24 and miR-421 and downregulation of *ATM* and *H2AX* was observed. In silenced AGS cells after treatment with H_2O_2 alone or combined with HPE, we observed an increase in the cell proliferation rate and the levels of intracellular ROS and DSBs and a reduction in the proportion of cells in S and G2/M phase arrest, leading to late apoptosis. *APE1* knockdown also caused a reduction in the expression of *ATM* and miR-421, while *ATR* expression was increased. Based on our results, *APE1* knockdown may promote changes in cellular processes by increasing genomic instability, leading to G2/M arrest and cell apoptosis, so it may be a promising strategy for controlling tumor progression.
Fomento	