# In vitro inhibitory effect of apple peel extract on the growth of helicobacter pylori and respiratory burst induced on human neutrophils

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In the present work, the in vitro effect of a standardized extract of apple peel APPE (60% of total polyphenols; 58% of flavonoids; 30% of flavan-3-ols and procyanidins) was evaluated with regard to the viability of Helicobacter pylori. The cytotoxic effect of APPE on H. pylori was also evaluated through the resazurin assay and ATP level determination. In both assays, APPE showed an early cytotoxic effect, which was both concentration and time-dependent. Additionally, the effect of APPE on the intra and extracellular production of reactive oxygen species (ROS) was evaluated in human neutrophils stimulated by H. pylori, phorbol myristate acetate (PMA), and formyl-methionyl-leucyl-phenylalanine (fMLP). The extracellular and intracellular production of ROS was evaluated through chemiluminiscence with the isoluminol-horseradish peroxidase (HRP) and luminol-superoxide dismutase (SOD)-catalase systems, respectively. APPE showed an inhibiting effect on the multiplication of two H. pylori str