P0137
Poster Session I
Basic science: pathogenesis

IMMUNOMODULATORY EFFECTS OF EXTRACTS OF (ORIGANUM VULGARE) (OREGANO) AGAINST (HELICOBACTER PYLORI)

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Objetive: Nitric oxide (NO) production can kill *Helicobacter pylori,* but induction by the microorganism of MO arginase II inhibits inducible NO synthase (iNOS) translation and restricts bacterial killing. Arginases are enzymes, natural competitive inhibitors of iNOS, because they metabolize the same substrate, L-arginine. Taking this into account, the aim was to evaluate in vivo immunomodulatory effect of oregano extract (OE) in both infected and uninfected MO with *H. pylori*.

Methods: Groups of four BALB/c mice were injected intragastrically twice in a 48 h period with 250 µl OE (1mg/ml). As control group, animals received 250 µl of PBS. Peritoneal cells were harvested from each mouse. Morphology of MO was evaluated by Giemsa staining. The production of reactive oxygen species (ROS) was evaluated with the nitroblue tetrazolium (NBT) assay and we used 1 mg/ml opsonized zymosan (OPZ) to stimulate the oxidative burst. Arginase activity and NO was determined in peritoneal MO uninfected and infected with *H. pylori* (ratio 1 MO: 10 bacteria).

Results: OE did not induce apoptosis in MO. Compared with the control infected group, the infected treated with OE mice showed a higher NBT reduction value ($p<0.01$) Arginase activity in MO from treated mice with OE was 1.8 fold lower than controls ($p<=0.001$). Arginase activity in treated MO and infected with *H. pylori* was 1.27 fold lower than control ($p<=0.04$) and treated MO without stimulation with *H. pylori* was 1.20 fold lower than control ($p<=0.02$). Release of NO in MO from treated mice with OE was 2.15 fold higher than controls ($p<=0.02$). NO in treated MO and infected with *H. pylori* was 1.39 fold higher than control ($p<=0.002$) and treated MO without stimulation with *H. pylori* was 2.05 fold higher than control ($p<=0.02$).

Conclusion: Several medicinal plants are considered immunomodulatory with a variety of anti-inflammatory, antimicrobial and antitumor effects and show the ability to activate macrophages both in vivo and in vitro. In this sense, many health effects can be attributed to the Mediterranean herb oregano and several studies demonstrated the antibacterial, antifungal and anti-inflammatory abilities. We previously demonstrated that oregano has antibacterial and anti-adhesive properties against *Helicobacter pylori,* a Gram-negative, microaerophilic bacterium that resides in the gastric mucosa and is implicated in the etiology of stomach cancer and peptic ulcers. Our results demonstrate that oregano inhibits arginase activity and increases nivels of NO in infected and non-infected MO with *H. pylori*. This immunomodulatory effect becomes OE in a potential treatment of *H. pylori* infection preventing damage to the gastric mucosa.