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Abstract

from MSc Dissertation titled

The Effects of *Helicobacter spp.* on Blood Pressure in Rat Models of Hypertension

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Hypertension affects over one billion people globally and is believed to underlie multiple cardiovascular diseases, however the exact cause remains unknown. *Helicobacter pylori* has been implicated in hypertension. Studies associated high blood pressures with *H. pylori* prevalence and eradication was accompanied by significant decreases in blood pressure. This study assessed the effects of antibiotics targeting *Helicobacter spp.*, and the effect of the human pathogen *H. pylori* on rat models of hypertension. To assess the effects of antibiotics, normotensive Wistar-Kyoto (WKY) and Spontaneously Hypertensive (SHR) rats were treated with either an antibiotic mix to select for or to eradicate *Helicobacter spp.* To assess the effects of *H. pylori*, SHR and WKY rats with *Helicobacter spp.* eradicated were inoculated with either *H. pylori* cultures or cell-free supernatants of *H. pylori* cultures. Systolic blood pressure was recorded throughout and after these processes. Selecting for *Helicobacter spp.* had no significant effect while eradicating *Helicobacter spp.* accompanied a significant decrease in systolic blood pressures of both SHR and WKY treated rats. A greater decrease in SHR was noted than in WKY, resulting in both strains reaching the same systolic blood pressure. Re-infection with *H. pylori* resulted in increased systolic blood pressure. This was less than the decrease measured following eradication with antibiotics. No significant changes were noted upon treatment with cell-free supernatants. This suggests that *Helicobacter spp*., including *H. pylori*, affects blood pressure, although these bacteria do not influence blood pressure alone. Other microorganisms also targeted by the antibiotics used may also play a role.