An extreme systemic inflammatory response may be observed in dogs that experience severe accidental trauma, such as being struck by a car. The inflammatory response may be so extreme that it complicates treatment and causes multiple organ failure. There are few currently available methods to counter an extreme systemic inflammatory response. The aim of this project was to use an ovariohysterectomy model to determine if systemic inflammatory mediators released in response to controlled trauma can be modulated by a fish oil infusion high in omega-3 fatty acids.

Three different cephalic vein infusates (fish oil, soybean oil, or saline) were given to dogs immediately following ovariohysterectomy and cytokine concentrations in jugular venous plasma samples were compared. After fish oil infusion, plasma omega-3 fatty acid concentration markedly increased, but the increased concentration was not long-lasting. Cytokine production when stimulated by pathogen-associated molecular patterns was increased by trauma (ovariohysterectomy), but it was not suppressed by fish oil infusion. Assuming cytokine production by circulating leukocytes is a marker of systemic inflammation, fish oil emulsion infusion at the dose and duration studied did not appear to attenuate the systemic inflammatory response.