

Efficacy of Mycobacterium Cell Wall-DNA complex (MCW-DNA) in the prevention of chemotherapy-induced neutropenia following concurrent administration

Aleksandar Masic, Juan Mangieri, Bojana Prunic, Lucas Rodrigues

Chemotherapy-induced neutropenia in clinical oncology may have negative implications as it increases the risk of infection, interrupts chemotherapy protocols and requires treatment dose reduction. Currently, there is no veterinary product available for use in the prevention of chemotherapy-induced neutropenia. Here, we demonstrated the potential of Mycobacterium Cell Wall-DNA complex (MCW-DNA), a non-specific immunomodulator derived from a non-pathogenic mycobacterium, to prevent chemotherapy-induced neutropenia in healthy dogs following concurrent administration.

The study design included one experimental group with ten dogs. All dogs concurrently received 3 mg/m² of vinblastine (VBL) and 200 µg/kg of MCW-DNA via intravenous route (IV) on two occasions seven days apart. All animals were closely monitored for occurrence of any AE's, CBC and clinical biochemistry parameters were measured. The efficacy of MCW-DNA in the prevention or reduction of neutropenia was determined by comparing the incidence, duration and severity of neutropenia during the two VBL/ MCW-DNA treatment cycles within same group. In addition, the incidence, duration and severity of neutropenia was compared between the dogs receiving VBL only using historical data from our previous study.

Our results revealed that concurrent administration of MCW-DNA with VBL significantly reduced the incidence (10% vs 90%), duration (days: 1.9±0.52 vs 3.9±0.66) and severity (Grade 4 [1] vs [9]) of neutropenia compared to dogs that received VBL alone.

These findings could have significant importance from a clinical standpoint and could support the use of MCW-DNA in conjunction with standard chemotherapy protocols. Additional studies in tumor-bearing dogs and in combination with chemotherapeutics are underway.