



**Title:** Clinical trial evaluating the impact of oclacitinib maleate (Apoquel®) on T regulatory cells in dogs receiving standard-of-care (SOC) maximum-tolerated-dose (MTD) doxorubicin chemotherapy for the treatment of naturally-occurring cancer.

**Purpose:** The objective of this Phase 1 (pilot) study is to evaluate the impact on the T cell subpopulations in dogs receiving combination therapy with oclacitinib maleate (Apoquel®) and doxorubicin chemotherapy, with all drugs intended to be administered at standard doses and intervals, for the treatment of naturally-occurring cancer. Recent laboratory work has suggested T cell populations in dogs are impacted by oclacitinib, and this could have positive therapeutic implications for dogs with cancer. This is because T regulatory cells can inhibit the body's immune response to diseases, such as cancer, so by decreasing the numbers of these cells we might enhance the body's immune response. The secondary objective of this study is to verify the safety of combination therapy with oclacitinib maleate (Apoquel®) and doxorubicin chemotherapy, when administered at standard doses and intervals, in dogs with naturally-occurring cancer.

**Clinical Protocol:** All enrolled dogs will receive oclacitinib maleate (Apoquel®) throughout the study period, beginning on study day 0/1. All enrolled dogs will also receive doxorubicin chemotherapy, administered intravenously on five occasions throughout the study period, on study days 14, 35, 56, 77 and 98. Blood and urine samples will be collected at baseline on study day 0/1, and immediately prior to each dose of chemotherapy on study days 14, 35, 56, 77 and 98, as well as one week after each dose, on study days 21, 42, 63, 84 and 105, and three weeks after the final dose of doxorubicin therapy, on study day 119. An additional blood sample will be collected simultaneously at each of the chemotherapy clinic visits, specifically on study days 0/1, 14, 35, 56, 77, 98 and 119 for flow cytometric analysis of the T cell populations.

**Eligibility:**

- Dogs diagnosed with naturally-occurring cancer, and for which doxorubicin is determined to be an appropriate therapy, will be considered for enrollment.
- Dogs of any breed, age, gender and weighing a minimum of 5.0kg, with satisfactory health scores are eligible to be considered for enrollment.
- Dogs receiving additional concurrent corticosteroids will be excluded from enrollment.

**Client Compensation:** Currently there are minimal funds to support client and pet involvement in this study. The Flow Cytometric analysis, blood and urine tests on specified study days (0/1, 14, 35, 56, 77, 98 and 119), and the oclacitinib are covered, at the hospital's discretion. Clients will be responsible for the costs associated with initial diagnostic work-up, ongoing diagnostic and monitoring tests (blood tests, urine tests, and imaging not covered by the study), and the prescribed carboplatin therapy, and any additional and/or ongoing therapy.

**Owner Responsibilities:** With regards to this study, I, the owner, fully understand the following:

- My dog receiving doxorubicin must present the KSU VHC, at minimum on study days: 0/1, 14, 35, 56, 77, 98 and 119. Blood and/or urine samples will be collected on these days. (Please

note: Additional monitoring blood draws are required for standard-of-care monitoring on study days 21, 42, 63, 84 and 105, but these do not have to be performed at the KSU VHC.)

- Doxorubicin chemotherapy will be administered intravenously on five occasions, on study days 14, 35, 56, 77 and 98.
- The study will provide me with a quality of life questionnaire that I will complete at each of the study visits. The questionnaire specifically addresses the potential clinically observable side-effects of this combination therapeutic protocol, such as lethargy, weakness, inappetence, nausea, vomiting and/or diarrhea.
- Oclacitinib maleate (Apoquel®) must be administered (to the best of my abilities), by mouth, once daily, throughout the study period from day 0/1 to 119.
- I am responsible for the costs associated with my dog's initial diagnostic work-up, all the ongoing diagnostic and monitoring tests (blood tests, urine tests, and imaging), including the blood and urine tests described above, the prescribed doxorubicin therapy, and any additional and/or ongoing therapy.
- The oclacitinib (Apoquel®) and the blood and urine tests, specifically on study days 0/1, 14, 35, 56, 77, 98 and 119, will be covered, at the hospital's discretion.
- I give my permission to publish the data obtained from this study for the benefit of the scientific community. I understand that my dog will not be identified individually in any such publications.
- I may withdraw my dog from this study at any time without penalty.
- My dog's participation in this study will cease at day 119.
- The veterinarian in charge may withdraw my dog from this study if he / she determines that my dog is adversely affected.

**CONTROL GROUP:** *This trial includes a subset of patients with naturally-occurring cancer to serve as a control group. Patients in the control group will receive standard doxorubicin chemotherapy but will not receive oclacitinib maleate (Apoquel). The objective for the control group is to evaluate the impact of doxorubicin chemotherapy alone, on the T cell subpopulations in dogs with naturally-occurring cancer.*

*All enrolled dogs will receive standard doxorubicin chemotherapy, administered intravenously on five occasions throughout the study period, on study days 0/1, 21, 42, 63 and 84. Blood and urine samples will be collected immediately prior to each dose of chemotherapy, on study days 0/1, 21, 42, 63 and 84, as well as a blood test one week after each dose, on study days 7, 28, 49, 70 and 91, and three weeks after the final dose, on study day 105, as is considered standard practice for monitoring throughout doxorubicin chemotherapy. An additional blood sample will be collected on each of the clinic visits, on study days 0/1, 21, 42, 63, 84 and 105, for Flow Cytometric analysis of the T cell populations.*

*Similar to the primary study, the Flow Cytometric analysis and the blood and urine tests on specified study days (0/1, 21, 42, 63, 84 and 105) will be covered, at the hospital's discretion.*

➤ **Owners will be given a choice as to which group they wish to participate in.**

**Contact Information:**

For more information, please contact Kris Richardson, Clinical Trials Coordinator:  
Phone: (785) 532-3046; Email: [ClinicalTrials@vet.k-state.edu](mailto:ClinicalTrials@vet.k-state.edu)