

## Evaluation of the proper dosage of lapatinib and its safety in dogs

### ABSTRACT

Lapatinib is a low-molecular-weight agent targeting the epidermal growth factor receptor (EGFR) and human epidermal growth factor receptor 2 (HER2). It is one of the antitumor agents used against advanced breast cancer in human. We intended to apply it against canine mammary gland tumors (cMGTs). To this end, we evaluated the tolerated dosage and the side effects of lapatinib in healthy dogs. In this study, we conducted a dose-escalation toxicity test starting from 30 mg/kg to determine the maximum tolerated dose. Grade 3 toxicity, which was apparent as weight loss, was observed at the dose of 40 mg/kg/day. We then performed a long-term administration test and found that the dose of 35 mg/kg/day was well-tolerated within 7 weeks but caused grade 3 hepatic toxicity by the eighth week. In conclusion, our findings reveal that the dose of 35 mg/kg/day administered for no more than 8 weeks is fairly safe for use in healthy dogs. This dose is higher than the recommended dose for humans; thus, further studies evaluating the effective dose against canine tumors are needed.

**Keyword:** Dog; Human epidermal growth factor receptor 2; Lapatinib; Mammary gland tumor; Safety test