Three experiments were conducted in order to assess the efficacy of a new formulation containing doramectin 3.5% against Cochliomyia hominivorax larvae in cattle. In the first study, 60 adult cattle were selected, randomized based on body weight and allocated to four groups of 15 animals each: GI - saline (control); GII - doramectin 3.5%, subcutaneously; GIII - doramectin 3.5%, intramuscularly; and GIV - abamectin 1% LA, intramuscularly. All cattle were castrated and treated on Day 0, at a dose of 1mL/50kg bw. Every day up to Day 20 post-castration, scrotal wounds were carefully examined to evaluate the preventive action of the formulations against larvae of C. hominivorax (myiasis). Doramectin 3.5% showed an efficacy of 100% for both routes of administration, completely preventing the development of C. hominivorax larvae in the scrotal lesions. In the second assessment, conducted in Rio Grande do Sul State, 45 cattle were randomized in three groups of 15 animals each. GI received saline; GII received doramectin 3.5%, intramuscularly (700µg/kg); and GIII received abamectin 1% LA, intramuscularly (200µg/kg). Cattle were inspected daily for 15 consecutive days from Day 3 post-treatment. Efficacy rates ranged from 88.89 to 100% for GII, and from 0 to 44.44% for GIII, between Day 5 and Day 15 post-treatment. Doramectin 3.5% was significantly (P≤0.05) more effective than abamectin 1% LA in the control and prevention of scrotal myiasis caused by Cochliomyia hominivorax larvae. In the third study, two skin incisions were made in 32 animals, under local anesthesia, in the area comprised between the infraspinous fossa and the shoulder blade dorsal border. As the presence of C. hominivorax larvae was confirmed, the animals were allocated to four experimental groups, based on individual body weight: GI - saline; GII - doramectin 3.5%, subcutaneously; GIII - doramectin 3.5%, intramuscularly; and GIV - abamectin 1% LA; intramuscularly. The formulation containing doramectin 3.5%, injected intramuscularly and subcutaneously, achieved an efficacy of 100% against larvae of C. hominivorax, following three and five days post-treatment, respectively. During the experiment, abamectin 1% LA administered by intramuscular route did not differ statistically (P>0.05) from the control group, with regards to the number of active myiasis.