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THERMAL REQUIREMENTS FOR GERMINATION OF SORGHUM SEEDS

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Knowledge of the thermal requirements for germination allows sorghum (*Sorghum bicolor*) genotypes to be sown at different moments, considering the environmental conditions at the time of sowing, and the conditions during the crop cycle. The objective of this study was to evaluate the germination response of five sorghum genotypes at constant temperatures during the process. The germinative power and vigor of the seeds of each genotype were analyzed. The germination test was conducted in growth chambers with constant temperatures every 2 °C in a range between 8 and 40 °C, and evaluated daily. The seed that developed a seedling with a 3 cm radicle and 2 cm coleoptile was considered germinated. There were genotypic differences in the response to the parameters evaluated. The percentage of germination was not significantly modified over a wide temperature range, although there were differences between the genotypes. The mean time of germination was inversely affected by temperature; there was a turning point at 16°C, increasing significantly below this value. The germination rate decreased with low temperatures (10-14 °C), causing staggered germination. The base temperature varied between 9.4 and 11.1 °C, the optimum temperature, between 30.7 and 36.1 °C and the maximum temperature, between 38.2 and 41.1 °C, according to the genotype. Thermal germination time varied between 28.7 and 48.0 °Cd, according to the genotype.

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ANTIPARASITIC EFFECT AND BEHAVIORAL REESTABLISHMENT IN MICE TREATED WITH CLOMIPRAMINE

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The research for new therapeutic agents was proposed due to the limitations of the current treatment for the American trypanosomiasis, caused by *Trypanosoma cruzi*. Clomipramine (Clo) is a tricyclic antidepressant that has shown efficacy in experimental models as antiparasitic, but could modify some behavioral patterns. In addition, behavioral changes due to infection have been observed in experimental models and, less significant, in humans. For this reason, we proposed to evaluate the effect of Clo upon anxiety-related behaviors. Male Swiss Albino mice were grouped as follows: uninfected mice (NI): NI+Vehicle, NI+Clo5mg/kg/day, and NI+Clo1.25mg/kg/day (n=10), and mice infected with 50 trypomastigotes of *T. cruzi* Y strain (INF): INF+Vehicle, INF+Clo5mg/kg/day, and INF+Clo1.25mg/kg/day (n=15). The treatment was administered orally for 30 days and anxiety-like behavior was evaluated in Plus Maze test. The efficacy of the treatment was measured through parasitemia (qPCR) and survival. The results were analyzed using ANOVA and multiple comparisons by Fisher's test. In relation to survival and parasitemia, the INF+Clo5mg/kg/day and INF+Clo1.25mg/kg/day groups presented significant differences with the INF+Vehicle group (p<0.05). Based on the evaluation of Plus Maze test, we found that infected mice had an anxiolytic behavior. The INF+Clo1.25mg/kg/day group did not present significant differences with the NI+Vehicle group. Finally, the concentration of Clo1.25mg/kg/day could be considered suitable for the treatment of this infection due to its anti-*T. cruzi* effectiveness and its ability to reestablish the behavioral pattern studied in the present work.

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INSECTICIDAL AND REPELLENT ACTIVITIES OF ESSENTIAL OILS FROM *ALOYSIA CITRIODORA* AND *MINTHSTACHYS VERTICILLATA* AGAINST *SITOPHILUS ZEAMAI* (COLEOPTERA: CURCULIONIDAE)

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The maize weevil *Sitophilus zeamais* Motschulsky is a worldwide primary pest of stored maize. Essential oils (EO) constitute an important source of natural bioactive compounds and are considered interesting alternatives to conventional insecticides against stored-product pests. The aim of the current study was to evaluate the insecticidal and repellent activities of EO from lemon verbena (*Aloysia citriodora* Palau) and peperina (*Minthostachys verticillata* Griseb. Epling) and of their combination, against *S. zeamais*. The insecticidal effect was evaluated through fumigant assays. *Minthostachys verticillata* EO showed the strongest fumigant activity (LC₅₀=28.2 µL/L) followed by the combination of *A. citriodora* and *M. verticillata* EO, (CL₅₀=77.6 µL/L), while *A. citriodora* EO was not toxic at 600 µL/L. The repellent effect was evaluated using a two-choice olfactometer. The EO of *A. citriodora* and *M. verticillata* had repellent activity against the maize weevil; however, the combination of both EO had a higher effect suggesting a possible synergism between EO components. The EO studied, alone or in combination, had interesting insecticidal and/or repellent properties and could be suggested for use in management plans against *S. zeamais*.