

SMALL MOLECULE FOR THE TREATMENT OF EQUINE SEPSIS

OU ID: #03007

Overview

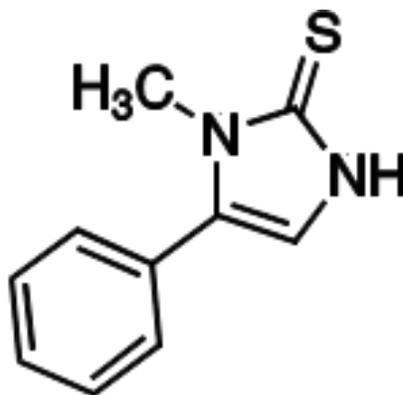
Sepsis is a systemic inflammatory response to an infection and is responsible for nearly one-third of all foal mortality. Current treatment consists of broad-spectrum antibiotics, IV fluids, nutritional support, and administration of other medicines as the situation demands. Survival rates vary depending on the underlying cause of the disease and range from 26-86% for septic neonatal foals, with the majority of studies showing a rate of 45-60%^{1,2}.

The current invention, a small molecule that targets inflammation associated with Toll-like receptor overexpression, is able to protect horses from endotoxic shock.



Commercial Application

5-phenylmethimazole, or “C10,” is envisioned as the new gold standard therapy for horses that develop sepsis. Based on the individual patient, C10 may be administered alone or in combination with supportive antibiotics, fluids, and other anti-inflammatories. The data generated using an equine model of endotoxic shock (as described in issued US Patent 9,326,972) indicate that C10 is both an effective prophylactic for animals at risk for developing endotoxic shock, as well as a treatment able to rescue those already suffering from the disease³.



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Benefits

C10 protects horses from endotoxic shock induced by lipopolysaccharide (LPS). LPS-treated horses developed hypotension, hypothermia, tachypnea, rapid pulse, abnormal cardiograms, and collapse within 24 hours. They also experienced abdominal pain, diarrhea, and an increased number of stools. Animals treated with C10 showed none of these effects. C10 was also able to protect the animals from cardiac anoxia, acute renal failure, and dehydration.

C10 protects horses from peritonitis-induced endotoxemia and endotoxic shock. Animals inoculated intraperitoneally with intestinal fluid rapidly exhibited symptoms of endotoxemia. C10 provided a protective effect from the free LPS in the intestinal lumen and the C10-treated horses showed only mild signs of endotoxemia.

C10 prevents toxic shock in horses subjected to operative procedures to remove necrotic bowels. When treated with C10 post-operatively, animals were walking and eating within 24 hours and had full recovery in all cases. However, those treated with antibiotics alone were more likely to develop toxic shock, become severely ill, and die.

References

¹The Merck Veterinary Manual. Veterinary Professionals. Management and Nutrition. Management of the Neonate. Sepsis in Foals. http://www.merckvetmanual.com/mvm/management_and_nutrition/management_of_the_neonate/sepsis_in_foals.html.

²Taylor, S. (2015), A review of equine sepsis. Equine Veterinary Education, 27: 99-109. <http://onlinelibrary.wiley.com/doi/10.1111/eve.12290/full>.

³US Patent 9,326,972, issued May 3, 2016.

Photo of mare and foal obtained from Google Images. https://www.google.com/search?q=mare+and+foal&biw=1920&bih=947&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjQwt7A0-LPAhXKy4MKHe_cBJEQ_AUIBigB#imgrc=LLZMuF2KrwGThM%3A

Contact Us

Korie G. Counts, Ph.D.
Technology Commercialization Manager
P: 740-593-0977
E: counts@ohio.edu
<http://www.tto.ohiou.edu/>



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