

E Coli Antibodies in Caniplas E®

Donor dogs are hyperimmunised with a strain (J5 rough coat mutant strain) of E Coli, a gram negative bacteria that lives in the gastrointestinal tract that exposes its Lipopolysaccharide (LPS). This is a molecule on the surface of any gram negative bacteria that acts as an endotoxin when in the bloodstream of an animal.

Because the LPS molecule is exposed, the donor dogs produce antibodies against it, resulting in the production of anti-LPS antibodies in their plasma.

We have also shown that our donors' plasma is high in another protein which is a receptor for a cytokine called Tissue Necrosis Factor alpha. That is, the plasma also has a high number of TNF alpha receptors. These can capture TNF alpha molecules and neutralise them.

Some definitions:

SIRS – Systemic Inflammatory Response Syndrome: this term is used to describe systemic inflammation that may be caused by infectious agents (bacteria, viruses, fungi) or non-infectious causes (trauma, burns, injuries etc.) When SIRS is the result of infection, it is termed Sepsis.

Septicaemia is defined as bacterial infection in the blood in conjunction with SIRS.

DIC – Disseminated Intravascular Coagulation: excessive coagulation of the blood in the tiny vessels supplying tissues/organs, causes blockage of these vessels and hence a lack of oxygen carrying red blood cells. This results in tissue/organ hypoxia and cell death. If severe and extensive enough, it results in Multiple Organ Dysfunction Syndrome (MODS) and a very sick animal. The excessive coagulation process ends up consuming all of the clotting factors and fibrinogen resulting in an animal that actually starts to bleed from multiple sites within the body.

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E Coli Antibodies in Caniplas E® - continued

Understanding the inflammatory reaction:

SIRS and MODS are severe manifestations of inflammation and result in a very sick animal. This Inflammation can be caused by non-infectious diseases (e.g. Acute Pancreatitis) or infectious disease (e.g. Parvovirus, anything that causes an increase in intestinal permeability resulting in translocation of bacteria from the intestine into the bloodstream). In infectious diseases or sepsis, bacterial LPS (endotoxin) in the bloodstream of an animal causes an inflammatory process.

Once LPS is in the bloodstream, it causes release of cytokines (chemical messengers) that trigger a generalised inflammatory reaction. One of the main cytokines responsible for this pro inflammatory reaction is TNF alpha. This usually beneficial inflammation promotes local coagulation to confine tissue damage. However, if the reaction is severe enough it results in the condition called SIRS. DIC and MODS can result from this and cause death.

Caniplas E can reduce the inflammatory response in two ways:

1. Anti-LPS antibodies can mop up circulating LPS in the bloodstream
2. TNF alpha receptors can bind up TNF alpha

Support for this is in papers that can be found on our website. Caniplas E also supplies clotting factors and fibrinogen to help combat DIC.

Caniplas E is licenced under the APVMA Permit Number PER14792.

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Production Manager
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