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# Significant Impact of Botanicals on the Microbial Population of Animals

Bangladesh is an agricultural country whose economy is mostly dependent on revenues from animals (e.g. meat, milk, hides, skin, etc.). Therefore, my community needs to understand how to enhance animal performance because peoples are still unaware about the proper medication procedure rather they are solely dependent on antibiotics and on costly medicines, which is causing animals to become resistant to them. As the depletion of animal performance was increasing at the same time as the awareness regarding using of medicine was decreasing these things started to disturb me as I was unable to do anything at that time. After a few days when I was promoted to the 4$^{th}$ year of my undergraduate program, I had a chapter related to therapeutic uses of the botanicals in animals, and surprisingly the teacher who is considered to be the best in this field conducted the class. As I have shown my interest in this field he introduce me to some of his research areas also he took me to his farm where he described me how to use various medicinal plants on animals and how to determine their efficacy and response of it's to the overall health status of animals. Besides, last year when pandemic occurs I completed some online courses among them three of were related to AMR(Anti-microbial Resistance).Therefore last year, I started thinking about ways to start using botanical plants instead of using antibiotics to reduce the usage of antibiotics more specifically anti-microbial drugs. In this eassy I will share the impact of two such botanicals in animals:

At first, I will begin with Ginger (*Zingiber officinale*) which is commonly known as " **Adha**" in my community. It has been used as a folk remedy to soothe the GI tract for ages. It improves the GI tract by strengthening GI tract motility, which quickens the rate at which the stomach empties. While discouraging abnormal movements like GI tract spasms, it promotes healthy digestive movement [(1)].Ginger contains more than 60 active constituents, including gingerols, shogaols, paradols, andeven zingerone, and is a good source of essential micronutrients such as potassium, magnesium, copper, manganese, silicone, and small quantities of vitamins such as A, E and some quantities of B and vitamin C are also

present in ginger rhizome[2]. In addition, ginger has considerable impact on **ruminants** as it significantly altered the bloodstream's composition and the fermentation pattern in rumens over a few hours, while also significantly raising rumen calcium and VFA levels for a few days. Besides, TPC, pH, and rumen ammonia concentration are all maintained by ginger [3]. Furthermore because of its modifications in blood and rumen constituents, it advisable to employ ginger supplementation at a dose of 500 mg/kg bwt taken orally for 3-5 days as an immune stimulant and in the management of respiratory illnesses and ruminal acidosis in sheep.

Let me share a personal experience regarding this: last October, when I visited my village, I noticed that some of my cousin's lactating cows were suffering from "ruminal acidosis" because they ingested a lot of paddy from the nearby field, as there is no veterinarian in my community, he was at a loss what to do because his family was solely dependent on the returns he received from selling cow milk. As soon as I got there, I showed him how to make a ginger paste and how to administered this, which he then fed to his cows along with their feed, resulting in a reduction of gas from the stomach after a few hours and this was my first experimental trial of botanicals in animals which was successful; this is why I still remember this day with great fondness. Furthermore, gut microbiota acts as a key modulator of peripheral and central sensitization pathways of chronic pain through gut microbiota-derived mediators (GMDM) in animals. These pathways include the activation of microglia and the infiltration of immune cells. Thus, dietary intervention with changes in GMDM may represent a new therapeutic strategy for chronic pain and here ginger with its analgesic and anti-inflammatory agent poses a great potential as a significant difference in its supplementation which acts as a beneficial signs for neuropathic pain relief[4]. Besides ruminants, ginger has a significant effect on **pet animals**. For example, Small dogs below ten pounds can eat up to one-quarter teaspoon of fresh ginger a day at the same time canines between ten and thirty-five pounds can consume a one-half teaspoon of fresh ginger a day, and large breeds can eat three-quarters of a teaspoon which a provide several health benefits as it is filled with antioxidants and contains anti-inflammatory properties that can promote healthy blood circulation, ease bloating, and increase heart health. Hence it can be proved as a best botanicals in terms of its use.

Now I will talk about another botanical plant that has a great influence on the microbiota of animals' guts. It is nothing but **Cinnamo**n (*Cinnamomum Verum), which is* commonly known as "**Dalchini**" in my area. It is commonly used as oil or as a powder, or as a spice and fed to animals along with their feed. Cinnamon oil contains agents that are reported to have gut health-promoting properties & as its oil consists of around 80% of cinnamaldehyde it has a wide array of activities against countless bacteria, yeast, and fungi. Various studies have also reported that cinnamaldehyde actively mitigates *E. coli*, *Salmonella enteritidis*, *Clostridium perfringens*, and *Aspergillus flavus*[(5)].In addition to reducing the population of pathogenic agents, cinnamaldehyde stimulates intestinal secretions, improves absorptive capacity, and modulates inflammation. Besides, as cinnamon oil is a component of "Excential Alliin Plus" it acts as a strong phytogenic solution so growth-promoting effects antibiotics like virginiamycin or bacitracin might be replaced by it [(6)]. In addition to this cinnamon has a great significance on dog's gastrointestinal tract as the fibers contributed by cinnamon favor intestinal transit and act as a natural remedy for constipation in dogs and also help eliminate gas and prevent vomiting, as well as relieve stomach discomfort[(7)]. Cinnamon also strengthens the immune system as it is rich in essential nutrients such as vitamins A and C, fiber, iron, and calcium. In addition, as this spice helps with weight loss and reduces abdominal fat concentration, it can also be consumed by overweight or obese patients.

Let me allow you to include another personal experience on this,-as cinnamon has an outstanding anti-analgesics effect so once when "Doli" (my female dog) was in an estrous cycle and started barking continuously and also start to show aggressive behavior I thought to give traditional remedy to lessens its pain as this has very least side effects and I found cinnamon available in my kitchen so I made to fed half tablespoon of cinnamon powder with its regular feed considering its body weight and health status and astonishingly it shows a great response after two hours of administration & I found my doli to be in a calm and refreshing mood. In addition to the above beneficial impacts of cinnamon on ruminants and pets, researchers are paying more attention to the poultry industry because it can be utilized as a growth promoter in poultry. Incorporating cinnamon as a natural feed additive into poultry feed has positive effects on nutrient digestibility, hypercholesterolemia, blood biochemical profile, gene expression, immunity, and

especially gut health to reduce the effects of disease and heat stress by maintaining water and electrolytic balance and feed intake. Cinnamon has clearly been shown to be a viable substitute for antibiotics in the chicken business, improving food safety, animal health, and economic elements of poultry production [8]. Therefore, it can be considered as a great botanical causing significant influence on animals' health status. Due to the substantial influence of these two botanicals, I have tried to include some crucial facts about these two plants that may have a significant impact on the health of animals.

## References


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