

Rauwolfia Serpentina and Peperomia Pellucida as an Antiparasitic Spray Against Rhipicephalus Sanguineus Latreille

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Abstract

Rauwolfia Serpentina (Serpentina) and Peperomia Pellucida (Pansit-pansitan) were used as the raw materials for creating different mixtures of both plants to determine which concentration will be faster in exterminating Rhipicephalus sanguineus Latrille. The leaves were boiled to get the essence, which in turn was used for the creation of the spray mixtures itself. The variants of the concentration in regards to the ratio Serpentina/Pansit-pansitan are: Mixture 1: 50%/50%, Mixture 2: 75%/25% and Mixture 3: 25%/75%. Upon the testing, it was recorded that the Mixture 1 had the results of 1.5 hrs (sprayed once), 1.33 hrs (sprayed twice) and 1.25 hrs (sprayed thrice). Mixture 2 had the results of 3.5 hrs (sprayed once), 3.42 hrs (sprayed twice) and 3.33 hrs (sprayed thrice). Mixture 3 had the results of 1.5 hrs (sprayed once), 1.42 hrs (sprayed twice) and 1.33 hrs (sprayed thrice). Considering these results, it is noted that Mixture 1 and Mixture 3 almost had the same results, if not for the few time differences. Mixture 1 was always minutes faster than Mixture 3, while Mixture 2 was left behind a few hours. Therefore, Mixture 1 is the fastest of all mixtures to exterminate the ticks in a controlled environment.

Keywords: *Serpentina, Pansit-Pansitan, Ticks, Antiparasitic*

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Introduction

Rauwolfia serpentina has been used since the pre-Vedic period for the treatment of a lot of infections and diseases. It is a large glabrous herb or shrub belonging to the family Apocynaceae, and found in Assam, Pegu, Himalayas, Java, Tenasserim, Deccan, Peninsula, Bihar, and the Malay Peninsula. It is a source of many phytoconstituents including alkaloids, carbohydrates, flavonoids, glycosides, phlorotannins, phenols, resins, saponins sterols, tannins, and terpenes (Chauhan et al., 2017). On the other hand, Pansit-pansitan, scientifically known as *Peperomia pellucida*, is a medicinal plant with anti-gout properties. Its anti-gout properties help to lower the uric acid amount in the blood. It was one of the ten medicinal plants which underwent clinical testing as per the orders of the Department of Health.

A study about the antibacterial activity of pansit pansitan against three gram- negative bacterial isolates showed that the plant indeed has antibacterial properties. The researchers extracted the leaf essence of the plant and added it to solvents, namely water, and ethanol. The results varied with the two solvents, wherein *Peperomia pellucida* with ethanol is much more effective than *Peperomia pellucida* with water (Akinnibosun et al., 2008). The main problem in the research is the Brown Ticks. Brown Ticks, scientifically referred to as *Rhipicephalus sanguineus* Latrille, is a common dog tick found almost in any dog. This type of ticks is usually reddish-brown in their adulthood, with no specific marks, unlike other species.

Brown dog ticks often travel into houses on canines, their preferred hosts, or cats. Because they are found deep within the hair of animals, homeowners may not immediately see them. Adult ticks typically embed themselves to a dog's ears and between its toes, while larvae and nymphs typically attach to the dog's back. If brown dog ticks do not have a preferred host to feed upon, they will readily seek out humans for their needed blood meals. The pests attach themselves to an animal's skin to feed on its blood and lay eggs in its fur. After entering homes, they breed and can spread onto residents and other pets (Orkin, 2021). Thus, this study aims to concoct a substance made from *Serpentina* and Pansit- Pansitan and test it. This intends to use variations of solutions and durations to offer a result on the mixture of *Serpentina* and Pansit- Pansitan. To be able to remove ticks found on domestic cats and dogs, to provide alternative herbal antibacterial spray without harmful chemicals and to create a study about ticks as a future basis for future research.

Methodology

The series of steps that are needed to be followed in order to have an accurate and substantial data collection are the following:

1. Prepare and gather all materials that are required in the whole procedure in making the antibacterial spray.
2. Wash all the leaves with tap water.
3. Crush the 20 leaves with a mechanical blender to get its extract.
4. Boil each 20 crushed leaves in separate pots with 400 ml water.
5. Stir the materials evenly for 30 seconds up to 1 minute.
6. Prepare the 3 glass containers and label them from mixtures 1 to 3. Use the funnel and measuring cups to follow the percentages needed for different mixture:
 - 1: 200 ml of Serpentina and 200 ml of Pansit-pansitan Mixture
 - 2: 300 ml of Serpentina and 100 ml of Pansit-pansitan Mixture.
 - 3: 100 ml of Serpentina and 300 ml of Pansit-pansitan.
7. Stir the materials evenly for 30 seconds up to 1 minute.
8. Cool the mixture and transfer it in a spray bottle.
9. Prepare 9 plastic cups and fill it with 2 ticks each. Follow the following label:
 - Label 1 - Mixture 1 (spray once)
 - Label 2 - Mixture 1 (spray twice)
 - Label 3 - Mixture 1 (spray thrice)
 - Label 4 - Mixture 2 (spray once)
 - Label 5 - Mixture 2 (spray twice)
 - Label 6 - Mixture 2 (spray thrice)
 - Label 7 - Mixture 3 (spray once)
 - Label 8 - Mixture 3 (spray twice)
 - Label 9 - Mixture 3 (spray thrice)
10. Every solution will be sprayed in the plastic cups that are labeled to their mixture.
11. After an hour from the first spray, researchers will record how many ticks were found dead.
12. This manner of checking will be done until all of the ticks are dead.

Period of Experiment. The following is the duration of the experiment in itself.

Week 1. The last days of week 1 will be fully devoted to the creation of the mixture. To be safe, the researchers will have to use a day or two for the creation of the mixtures in case one day will not be enough.

Week 2. This will be the period of experimentation and observation. One researcher who is assigned to this part of the study will take the mixtures and the specimens to their homes to conduct the experiment. Every hour, the researcher will spray the ticks in the petri dish with the mixture assigned to them. The experiment and observation will be enclosed in a week so regardless of the results, the researchers will have to conclude the experiment.

Method of Observation. The method of observation used is descriptive observation. In which you only describe what you see. This is due to the lack of laboratory materials available for the researchers.

Key Findings

Sepentina and Pansint- Pansitan is effective against Common Ticks.

Conclusion

Therefore, the Mixture 1, which has the 50/50 ratio of Serpentina and Pansit-pansitan, is the most effective for exterminating the tick samples in a controlled environment. Although Mixture 1 and Mixture 3, which has a 25/75 ratio of Serpentina and Pansit-pansitan, tied in the category of Sprayed Once, the difference of a few minutes made the results lean more to the side of the Mixture 1. The researchers conclude that even though all mixtures are effective in exterminating ticks, Mixture 2, which has a 75/25 ratio of Serpentina and Pansit-pansitan, is the slowest followed by the Mixture 3. Mixture 1 is the fastest option in terms of effectiveness and rapidity in the extermination of ticks.

Recommendations

This study revealed the effectiveness of Serpentina and Pansit-pansitan extract as an antiparasitic spray in Domestic Cats and Dogs. Thus, the following are recommended: hypoallergenic test must be tried in laboratory, if negative result will show, then proceed in

animal testing, acquiring equipment for future researchers, and further research for making the product extend its shelf- life may be conducted.

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