

Comparative Impact of Asparagus Racemosus and Cinnamomum Zeylanicum Extracts on Reproductive Organ Mass and Accessory Gland Secretory Markers in Male Swiss Albino Mice

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ABSTRACT

This study looks at how water-based (aqueous) and alcohol-based (alcoholic) extracts of *Asparagus racemosus* (Shatavari) and *Cinnamomum zeylanicum* (Dalchini) affect the weight of reproductive organs and chemicals related to fertility in male Swiss albino mice. Seven groups of mice were studied over 45 days. The results showed that giving these extracts alone or together significantly increased the weights of the testes, epididymis, seminal vesicles, and ventral prostate. Important chemicals that show reproductive health also increased. These included the protein content in the coagulating gland, sugar (fructose) levels in the seminal vesicles, and acid phosphatase activity in the ventral prostate. Overall, the alcohol-based extracts and the combined treatments gave the best results, showing that the two plants work well together.

KEYWORDS: *Asparagus racemosus*, *Cinnamomum zeylanicum*, Organ Weights, Fructose, Acid Phosphatase, Accessory Glands.

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1. INTRODUCTION

Infertility is a major health problem worldwide, and problems related to the male partner are responsible for nearly half of all cases [Akhter, 2024]. In males, fertility depends on producing healthy sperm, maintaining a steady balance of hormones, and having healthy reproductive organs [Almeida et al., 2017]. Normally, the brain and the reproductive system work together through hormones. The brain releases signals that tell the testes to produce testosterone and support the development of new sperm [Oduwole et al., 2021]. However, this delicate balance can easily be broken. Modern life factors like pollution, high stress, smoking, drinking alcohol, obesity, and diseases like diabetes can harm male reproductive health [Durairajanayagam, 2018]. These issues often lower testosterone levels and cause damage to reproductive tissues [Sharpe, 2010].

Standard chemical hormone treatments often cause unwanted side effects and health risks, which makes many people look for safer options. Because of this, scientists around the world are testing traditional medicinal plants as natural treatments. These plants are often safer and work well with the body's natural processes. Two very popular plants used for reproductive health in traditional medicine are *Asparagus racemosus* (Shatavari) and *Cinnamomum zeylanicum* (Ceylon cinnamon).

Asparagus racemosus is well known for strengthening the body and balancing hormones. It contains active natural chemicals called saponins (like shatavarins) that help the body produce testosterone and protect the testes from stress [Gupta et al., 2011]. On the other hand, *Cinnamomum zeylanicum* contains active parts like cinnamaldehyde and polyphenols. These compounds act as strong antioxidants that fight cell

damage and reduce swelling, which helps keep reproductive organs healthy [Khaki et al., 2015].

While scientists know how these plants work on their own, there is not much research comparing them or checking how they work when mixed together. Therefore, this study was designed to see how water and alcohol extracts of these two plants-given separately and together-affect the weights of reproductive organs and the important chemical secretions in male Swiss albino mice.

2. Materials and Methods

Animals and Extracts: Healthy male Swiss albino mice were kept under standard laboratory conditions. Standard methods were used to make water-based and alcohol-based extracts from *A. racemosus* roots and *C. zeylanicum* bark.

Study Plan: The mice were divided into seven groups (with 6 mice in each group) and given treatments daily for 45 days using a small mouth tube:

Group I: Control group (given plain water)

Group II & III: Given water or alcohol extracts of *A. racemosus*

Group IV & V: Given water or alcohol extracts of *C. zeylanicum*

Group VI & VII: Given mixed water or mixed alcohol extracts of both plants

Measuring Organ Weights: After 45 days, the mice were humanely sacrificed. The testes, epididymis, seminal vesicles, and ventral prostate glands were carefully removed, cleaned of fat, and weighed using an accurate electronic balance.

Chemical Tests: Three important chemical tests were carried out to check how well the accessory reproductive glands were working:

- 1. Fructose Level:** Measured in the seminal vesicles because this sugar provides energy for sperm cells.
- 2. Total Protein:** Checked in the coagulating gland to see how well it functions.
- 3. Acid Phosphatase Activity:** Measured in the ventral prostate to check prostate health.

Data Analysis: The numbers were calculated as Mean \pm SE. The differences between the groups were checked using standard mathematical tests (ANOVA and t-test) to confirm if the changes were significant ($p < 0.01$).

3. Results

3.1. Weights of Reproductive Organs

The results showed that the plant extracts caused clear changes in the weights of the reproductive organs

compared to the control group. The alcohol-based extracts worked better than the water-based extracts. For instance, the alcohol extract of *A. racemosus* (Group III) caused a +25.0% increase in the weight of the epididymis, while the water extract (Group II) only caused an +11.0% increase. The group that received the mixed alcohol extract of both plants (Group VII) showed the highest increase in the weight of the testes and prostate gland, showing that the plants work very well together.

3.2. Chemical Levels in Reproductive Glands

The secretions from the reproductive glands improved significantly in the treated groups:

Seminal Fructose: The sugar levels increased highly ($p < 0.001$) in the combination groups, showing better gland activity.

Coagulating Gland Protein: Total protein levels went up, with the highest levels seen in the mixed treatment groups (Groups VI and VII).

Ventral Prostate Acid Phosphatase: This enzyme activity increased clearly in the cinnamon and mixed alcohol groups, proving that prostate function improved.

4. Discussion

Changes in the weight of the testes and nearby glands are a clear sign of how well male hormones (like testosterone) are working. The increase in organ weights in the treated mice indicates that both plants contain natural nutrients that help reproductive tissues grow and stay healthy.

The increase in fructose sugar gives sperm more energy to move, while the higher protein and enzyme levels show that the reproductive system is creating a healthy fluid environment for sperm survival. *A. racemosus* helps keep hormones stable, while *C. zeylanicum* reduces cell stress and protects the glands from damage.

5. Conclusion

This study proves that taking *A. racemosus* and *C. zeylanicum* extracts-either alone or together-increases reproductive organ weights and improves healthy chemical secretions in male mice. The alcohol-based extracts showed a stronger effect, showing that these natural plants have great potential for supporting male reproductive health.

6. References

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