

## **Characterization Of Bacteria Population On Dandruff Affected Human Scalp And The Efficacy Of Anti-Dandruff Shampoo Against The Isolated Bacteria Strain**

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### **Structured Abstract**

**Background:** This study examines the bacterial population found on human scalps affected by dandruff and assesses the effectiveness of anti-dandruff shampoos in combating these germs. The research seeks to discover the bacterial species linked to dandruff and evaluate the antimicrobial characteristics of different shampoos using biochemical and molecular analysis. Dandruff, a prevalent scalp ailment associated with an imbalance in microbial communities, has conventionally been managed using antifungal medications. Recent investigations indicate that bacteria, namely *Staphylococcus* spp., have a substantial role in the development of the disease.

**Methods:** The methodology encompassed the recruitment of three individuals exhibiting dandruff, followed by the isolation and cultivation of bacteria derived from samples obtained from their scalps. The bacteria were subsequently characterized using techniques such as Gram staining, catalase test, Kovac oxidase test, and MacConkey agar. The process of molecular identification involved the extraction of DNA and the use of PCR. The antimicrobial efficacy of anti-dandruff shampoos was assessed by the agar well diffusion method.

**Results:** The results indicated that the bacteria that were separated were Gram-positive, catalase-positive, oxidase-negative, and showed different levels of lactose fermentation. The PCR findings have verified the existence of bacterial DNA, as shown by the appearance of bands of the anticipated size. Both chemically-formulated (Head and Shoulders) and naturally-derived (Natural by Watsons) anti-dandruff shampoos had notable antimicrobial properties, however an antifungal shampoo (Olivia) proved to be ineffective against the bacteria that were isolated.

**Conclusion:** In conclusion, the findings of this study demonstrate that the formation of dandruff is not solely linked to the presence of fungi, but also involves the involvement of bacteria involved. It was found that the anti-dandruff shampoos that were tested exhibited antimicrobial properties, with chemical-based shampoos demonstrating a higher level of effectiveness in comparison to plant-based shampoos. For the purpose of identifying the specific bacterial species that are responsible for dandruff and developing targeted treatments, it is recommended that further research be conducted.

**Keywords:** Dandruff, Bacterial characterization, Anti-dandruff shampoo, Antimicrobial activity

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