CHAPTER – 1

INTRODUCTION

OVERVIEW:

This chapter is fundamentally present significant perspectives related to contemporary trends of research in the sanitary napkins' enhancements for hygiene and comfort. This chapter also encapsulates additional sections contained throughout the thesis.

Worldwide 26% of the overall population, and 0.8 billion humankinds menstruating each day, as the menstruation cycle which is usual and well physiological phenomenon. Contempt actuality a communal and vigorous practice, admittance to catamenial goods, voluptuous well-being edification, remote hygiene amenities, and hygienic aquatic is not consistently assured. The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) define catamenial sanitation administration as the right of menstruators to obtain hygienic materials for blood absorption or collection, which can be reformed privately as habitually as obligatory during the catamenial sequence, along with admittance to cleanser and aquatic for personal hygiene and facilities for the disposal of utilized goods. UNESCO contends that precise and prompt rights-based edification around menstruation is critical for efficient menstrual sanitation supervision and for varying the disgrace connected with menses through a constructive communal custom framework (Cohen et al., 2024; Harrison & Tyson, 2023).

Studies demonstrate that period scarcity is a noteworthy anxiety in inferior- and middle-income nations, where numerous zones frequently lack sufficient aquatic, hygiene, and sanitation amenities. Although infrequently examined, period poverty is recognized as a substantial concern in high-income nations, predominantly upsetting individuals in pastoral parts, minority racial societies, the displaced or street-involved inhabitants, and correctional institutions. In 2020, Scotland became the first country to implement laws requiring all educational institutions and governmental bodies to provide menstruation products at no cost, while also committing to distribute these products free of charge to those in need. Various provinces in Australia, France, the United States, Canada, and New Zealand are improving admittance to complimentary goods in educational institutions and other community spaces, while the administrations of Zambia, Kenya, and Uganda have likewise augmented admittance to permitted goods in institute locations. Today, limited initiatives ensure that individuals and communities can obtain a diverse range of menstrual product options, and there is a lack of focus on mitigating the global environmental impacts of these products (Khorsand et al., 2023; Kumar et al., 2024; Woodruff et al., 2023).

Numerous women are unaware that the vagina functions as an ecosystem necessitating a balanced environment for optimal health; occurrences such as menstruation, sexual activity, and hormone fluctuations can disrupt this equilibrium. Optimal pH levels and advantageous lactobacillus are essential for mitigating the danger of vaginal complications. pH denotes the acidity level of the vagina. A vaginal pH of 3.5 to 4.5 signifies the presence of beneficial bacteria (lactobacilli) while preventing the proliferation of pathogenic bacteria that may lead to odor and irritation. A high pH indicates that the vaginal microbiota may have difficulty surviving, but pathogenic bacteria may flourish. Women frequently encounter numerous factors for increased pH, which include (Khorsand et al., 2023; Kumar et al., 2024):

1. Period: The pH of blood is 7.4, significantly more alkaline than the regular pH of vagina range between 3.5 to 4.5, potentially resulting in an increased vaginal pH.
2. Sex: Semen possesses a pH range of 7.1 to 8 and has the capacity to elevate vaginal pH.
3. Hormones: Pregnancy, menopause, and the regular menstrual cycle can induce hormonal fluctuations that modify vaginal pH.

Regulating pH entails managing the natural vaginal milieu, hence eliminating undesirable odor, discomfort, and pruritus. The proposed research work is concentrated on the formulization pH-responsive polymers and its microencapsulation.

Consequently, the thesis has three different sections.

Primary section: Theoretical analysis of the introduction, literature review, classification of pH-responsive polymers, microencapsulation, and the product list for coating in Chapters 1 and 2 concerning feminine hygiene.

The second section: Chapters 3 and 4 of this part detail the synthesis of several pH-responsive polymers, their encapsulation, and the experimental methodologies utilized for coating the upper or intermediate layer of sanitary napkins. The section encompasses acquired findings and relevant observations.

Section Three: Chapter 5 concludes with a comprehensive discussion, conclusions, and prospective considerations.

References

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