

## HARYANA

Use of intimate wash to help reduce the spread of UTI & reduce use of antibiotics for the treatment of UTI.

With reference to the subject above, we propose to supply a pH balanced therapy to eliminate the growth of UTI causing bacteria. It helps reduce the chances of Urinary Tract Infection (UTI) caused by a common bacterium - Escherichia coli (E. coli), it is a gram-negative bacillus known to cause illness in humans. There are hundreds of identified E. coli strains, resulting in a spectrum of disease from mild, self-limited gastroenteritis to renal failure and septic shock. Its virulence lends to E. coli's ability to evade host defences and develop resistance to common antibiotics.<sup>[1]</sup>

E. coli is mostly found in waste water. Almost 80% of water supply flows back into the ecosystem as wastewater. This can be a critical environmental and health hazard if not treated properly. We generate more sewage, than our ability to treat.

In India, the sewage generation in the urban centres, as per the recent assessment by Central Pollution Control Board (CPCB), was 72,368 Million Litres per Day (MLD) for the year 2020-21. Currently, the installed sewage treatment capacity is 31,841 MLD, but the operational capacity is 26,869 MLD, which is much lower than the load generated. Of the total urban sewage generated, only 28% (20,236 MLD) was the actual quantity of wastewater treated. This implies that 72% of the wastewater remains untreated and is disposed of in rivers/lakes/groundwater.

There are some increases in infrastructure, e.g., another 4,827 MLD sewage treatment capacity, has been proposed. Even with this added to the current installed capacity, there remains a 35,700 MLD (49%) gap between the wastewater generated and the capacity available for treatment. CPCB, 2021b).<sup>[2]</sup>

The Central Pollution Control Board (CPCB)'s NWMP 2021 reports it confirms presence of bacteria in our water caused due to contamination, we see numbers as high as 140MPN/100ml.

While UTI is curable, it primarily uses antibiotics. In 1945, the Alexander Fleming, Nobel Prize winner for discovery of penicillin, warned us against the free unchecked use of the drug as it leads to drug resistance.<sup>[3]</sup> With recent increase in community-acquired urinary tract infection<sup>[5]</sup> it is now more important than ever that we proactively eliminate the bacteria instead of relying on antibiotics for cure.

The use of contaminated water for personal hygiene and Uropathogens<sup>[4]</sup> spread within the community is currently leading cause of UTI amongst women which can be prevented by **use of pH balanced intimate wash**. This reduces the pH level of the intimate area to 3.5-4 which is a hostile environment for the bacteria and it perishes. It also reduces the need to consume antibiotics, which will be useful to ensure we preserve its effectiveness and use it as directed by a registered medical professional.

We are TJS Beauty Secrets India (P) Ltd., a Palghar, Maharashtra based FDA approved & registered cosmetic manufacturing company with production capacity to meet the demands of the State. We propose a state sponsored outreach program to create awareness amongst the women from schools, colleges, local clinics, govt. hospitals, anganwadi, etc. within the state and prevent further misuse of antibiotics.

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## Introduction:

Haryana is a state located in the northern part of the country and has New Delhi as its neighbour along with Punjab and Rajasthan. Gurgaon is one of the most promising areas of Haryana and has developed a lot in recent times. Gurgaon has been the centre of development for many IT companies thus there has been an influx of youth population into the state. Haryana shares its capital with the state of Punjab. Chandigarh is the capital of both Punjab and Haryana. Haryana has often been criticized for its low sex ratio something the state government has to work on.

The Population of Haryana according to the 2011 census stands at about 25 million, making it the 17th most populated state in India. The state lies in the northern part of the country and is well connected to the capital of India. There is a huge influx of population into Gurgaon, which is a part of Haryana from Delhi. The state is spread over an area of about 44000sq. km. making it the 20th largest state in the country in terms of area. The density of population per sq. Km. is about 570 which is above the national average. The state has a growth rate of about 19% which slightly exceeds the national growth rate of about 17%. The population of the state is rising considerably due to rapid efforts towards development and progress. The literacy rate in the state is about 76% a figure that has improved tremendously in the last few years due to the consistent efforts of the government. The sex ratio in Haryana leaves a lot to be desired as it lags behind the national average by 70 points. The statistics in the Haryana Census 2011 reveal facts that can be instrumental in planning for a better development plan for the state.

## Demographics:

As per details from Census 2011, Haryana has population of 2.54 Crores, an increase from figure of 2.11 Crore in 2001 census. Total population of Haryana as per 2011 census is 25,351,462 of which male and female are 13,494,734 and 11,856,728 respectively. In 2001, total population was 21,144,564 in which males were 11,363,953 while females were 9,780,611. The total population growth in this decade was 19.90 percent while in previous decade it was 28.06 percent. The population of Haryana forms 2.09 percent of India in 2011. In 2001, the figure was 2.06 percent.<sup>[9]</sup>

## The Study:

In another study, conducted in Adesh Medical College, Mohri district and published in the

*International Journal of Reproduction, Contraception, Obstetrics and Gynaecology (IJRCOG)*; the results are alarming - Out of 500 women who attended gynae OPD of Adesh Medical College, Mohri district were taken into study out of 500 patients 296 patients showed positive culture. UTI was found more in married females which were illiterate and belonged to low socioeconomic group. *E.coli* was the most common organism which was cultured. *E.coli* (55%) was found to be the most prevalent organism followed by *Klebsiella*.<sup>[11]</sup> UTIs are some of the most common bacterial infections in women. Women with UTI need to be properly investigated by urinalysis and urine culture. Marital status, socioeconomic status has high impact on the lifetime risk for UTI. *E.coli* was found to be the most common cause of UTI in all the age groups.

## Co-Relation of Antibiotics & UTI in Haryana:

In a study conducted by the Department of Biotechnology, Deenbandhu Chhotu Ram University of Science and Technology, Sonapat, Haryana, India - the urinary tract remains the most common site for Gram-negative bacterial infections. Approximately 150 million cases related to UTIs are reported annually. Women, as compared to men, are more susceptible to UTI and close to 50% of them encounter UTI once in their lifespan.<sup>[10]</sup>

UTIs most frequently stem from uropathogenic *Escherichia coli*, which alone is responsible for 80% of the cases. Other less common UTI pathogens include *Klebsiella*, *Pseudomonas aeruginosa*, *Staphylococcus saprophyticus*, *Proteus*, *Enterobacter*, and *Enterococci* species. Various virulence factors such as adhesins, siderophores, toxins, capsular polysaccharides, and fimbrial adhesins of uropathogenic *E. coli* (UPECs) encourage bacterial colonization and infection of the urinary tract. UPECs, which are a type of extra-intestinal pathogenic *E. coli*, are among the most widespread class of extra-intestinal infections subsequent to meningitis and neonatal sepsis. The other common types of pathogenic *E. coli* comprise intestinal pathogenic *E. coli* (InPEC), which include enterotoxigenic *E. coli*, entero-pathogenic *E. coli*, enterohaemorrhagic *E. coli*, enteroaggregative *E. coli*, enteroinvasive *E. coli*, enteric syndromes, Crohn's disease, and hemorrhage.<sup>[10]</sup>

## Treatment:

The currently available treatment measures for UTI involve the use of antibiotics as antibacterial agents; however, unrestricted and overuse of these antibiotics by clinical practitioners and patients has

led to the inception and advancement of multi-drug-resistant strains in uropathogens, especially in UPEC isolates. To avoid the likelihood of any kind of kidney-related complications, timely diagnosis followed by an early initiation of antibiotic treatment is required. Hence to circumvent the onset of complicated symptoms, the physicians normally tend to recommend an antibiotic course without waiting for the antibiotic susceptibility results which generally come in 3-4 days. These prior treatments with antibiotics encourage the onset of antibiotic resistance since different people tend to be susceptible to different antibiotics. This rise in antibiotic resistance has become a major hurdle in the treatment measures and has also been found to account for an increase in cases of morbidity and mortality in case of humans. Furthermore, a rise in extended spectrum beta lactamase strains (ESBL) and biofilm formation by uropathogens has made the existing treatment measures even more complicated. [10]

#### Proposed Change:

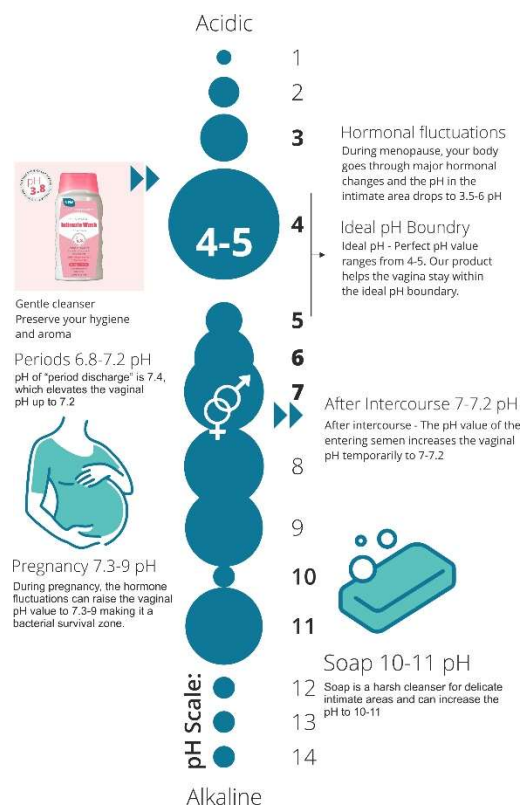
Considering the evolving nature of the bacteria and the criticality of misuse of antibiotics – we propose to use the skills of the cosmetic manufacturing industry and promote the use of pH balanced wash to restrict the growth of infection causing bacteria.



*Prevention is better than cure.*

A dermatologically tested product made with the intention to combat a significant issue, i.e.; misuse of antibiotics. This product will help prevent UTI

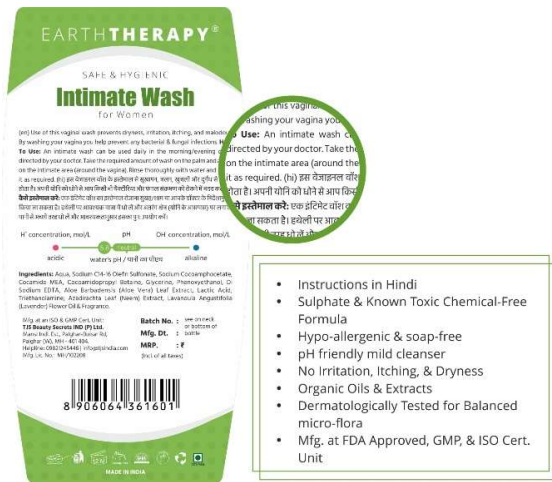
without the need of antibiotics by means of proactive healthcare planning.



As observed by University of Science and Technology, Sonipat, Haryana we must innovate our approach towards healthcare. The cost of research & production of antibiotics can range in billions of dollars and for pharma company to be able to sustain sales is vital, considering the huge population of the state can deliver the required stability even after making requested changes.

By regular use of this product we can restrict the bacterial growth with a target to reduce the consumption of antibiotics.

Designed with dual language label for ease of understanding how to use the product. Women regularly use intimate hygiene products as part of their daily cleansing routine. Currently, there are many different intimate feminine hygiene products that may be used for cleanliness and/or odour control, but some can alter the normal pH level/microbiota needed for protection against infection.



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