

Research Article

Open Access

Evaluation of the Quality of Sanitary Napkins Sold on the Market of the City of Yaounde

Mbole Mvondo Jeanne Mauricette^{1*}, Dona Manou Dorcas¹, Benga Chimene¹, Minyem Ngombi Afuh Aude Perine^{1,2}, Soppo Lobe VC¹, Nko'o HM¹, Maniepi Foumane S¹, Nyangono Ndong Martin¹, Ngolsou Francis¹, ABA'A Marthe¹ and Nnanga Nga¹

¹Department of Galenic Pharmacy and Pharmaceutical Legislation, FMSB, University of Yaounde, Cameroon

²Department of Pharmacy, Medicines and Laboratories, Ministry of Public Health, Cameroon

ABSTRACT

Objective: To assess the quality of sanitary napkins marketed in the city of Yaounde.

Methodology: This was an experimental study associated with a survey of women who used sanitary pads from March to September 2021 in the city of Yaounde. The physico-technical parameters and the microbiological quality of the selected towel brands were respectively determined and checked at the multidisciplinary laboratory of Galenic Pharmacy and Pharmaceutical Legislation of the FMSB-UY1. The data was collected and saved in an electronic database and its analysis was carried out by the Microsoft Excel software version 2019.

Results: Among the 116 women who consented to participate in the study, 51.73% were between the ages of 21 and 30, the majority were pupils and singles. We had identified a total of 32 brands of sanitary napkins sold in the city of Yaounde including "Hygiénix" (53%), "Always" (35%), "Amie" (35%) and "Nana" (29%). The organoleptic characters have been rendered, 100% of the labels were non-compliant and 100% of the towels had a pH between [6 - 6.95] after 4 hours of exposure. The test for the presence of *Escherichia coli* in the samples was negative for all samples.

Conclusion: several brands of sanitary napkins are sold in the city of Yaounde. Their labels were non-compliant, the pH was slightly acidic and microbiological control revealed an absence of *E. coli*.

*Corresponding author

Mbole Mvondo Jeanne Mauricette, Department of Galenic Pharmacy and Pharmaceutical Legislation, FMSB, University of Yaounde, Cameroon.

Received: August 03, 2023; **Accepted:** August 11, 2023; **Published:** August 20, 2023

Abbreviations

NF: Manufacturer's Name
NLF: Name and Logo of the Manufacturer
ACF: Full Address of the Manufacturer
NUE: Number of Units per Packaging
NL: Batch Number
DFE: Date of Manufacture and Expiry
MEC: Instructions for Use and Storage
CO: Composition
PR: Present
ABS: Absent
HYG: Hygiénix
ANY: Anytime
SOFT: Softcare
ALW: Always
FAY: Faytex

Introduction

Menstrual hygiene is an integral part of women's health and has a lasting impact on women's education, livelihoods and security, ensuring their empowerment [1]. In 2019, the World Health Organization (WHO), estimates that 2.3 billion women between

the ages of 15 and 69 have to live daily with the inconveniences of menstruation (or periods) around the world [2]. Also, during menstruation, the presence of blood in the vagina causes an imbalance in pH and vaginal flora. As a consequence, women are more likely to contract vaginal infections (irritations, vaginitis, etc.). These inconveniences help to determine the most suitable hygienic protection. Intimate protection products are consumer products used by women from the age of the first menstrual period (on average 12 years and 3 months) during or outside of menstruation (leucorrhoea, slight urinary leakage, etc.) in order to absorb the menstrual flow [3]. A study by ANSES (National Agency for Food, Environmental and Occupational Health and Safety, in France) published on July 19, 2018, reveals that "a number of substances found in intimate protection are suspected endocrine disruptors (Lilial, PAH, DnOP, lindane, hexachlorobenzene, quitozene, dioxins and furans)". It also identified other substances considered to be known or suspected skin sensitizers (which may cause allergic reactions) and other potentially carcinogenic substances [4]. In Cameroon, despite the multiplicity of brands of hygienic protections marketed on the market, the regulations in terms of the quality of the latter are not yet well defined.

Methodology

This was an experimental study in the field of quality control, conducted from March 2021 to September 2021 in the city of Yaoundé at the multidisciplinary laboratory of the Faculty of Medicine and Biomedical Sciences. Data was collected from female users of intimate pads through a form. Then, it was a question of counting the different brands of sanitary napkins sold in the city, determining the pharmacotechnical parameters of sanitary napkins. The results obtained were recorded in an electronic database and the analysis was carried out by Microsoft Excel software version 2019. The qualitative and quantitative variables were described and expressed as percentages.

Results

It is a question of presenting the main results obtained. These are on the one hand the results of the survey and on the other hand those of the quality control of the most sold sanitary napkins on the Cameroonian market.

Sociodemographic data

Age profile

Table I: Percentage of Women by Age Group

Age groups	Percentage
[14 – 20]	6.03%
[21 – 30]	51.73%
[31 – 40]	35.35%
[40 – 50]	6.89%

We notice that women aged 21 to 30 are the most numerous.

Situation Matrimoniale

Table II: Percentage of Women according to Marital Status

Situation Matrimoniale	Percentage
Bachelor	69.83%
Bride	28.45%
Divorcee	1.72%
Veuve	0%

Among the respondents, the single ones are the most numerous.

Profession

Table III: Percentage of Women by Profession

Profession	Percentage
pipil/student	40.52%
Public sector	25.86%
Private ector	22.41%
Informalsector	9.48%
Housewife	1.73%

Pupils and female students are the most numerous during the survey.

Data on Women's Practices

Frequency of Changing the Sanitary Napkin at Night and during the Day

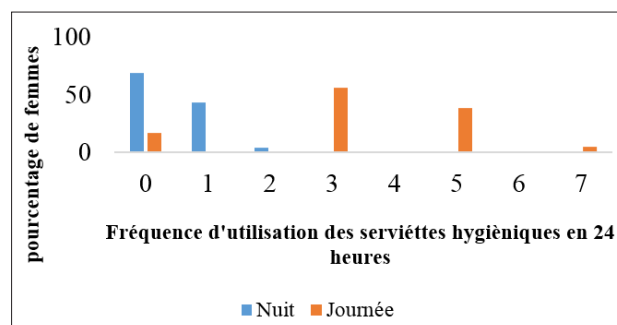


Figure 1: Frequency of Change according to the Number of Women

From this Figure 1, it appears that 17 women keep the same sanitary napkin all day and 69 all night; 43 women change their towels once at night, 4 women twice at night while 38 women change 5 times a day and 5 women 7 times a day.

Compliance with Hygiene Rules

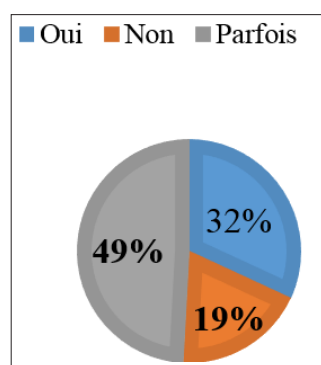


Figure 2: Percentage of Women who wash their Hands before use

Figure 2 illustrates the percentage of women who observe hygiene rules before changing their pads. It appears that 49% say they wash their hands before using the towels; 32% don't do it at all and 19% do it sometimes.

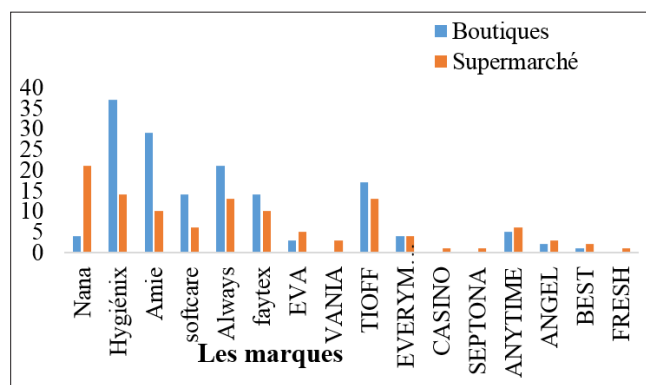
Data on the Brands of Towels used

Brands most used by Women

Table IV: Percentage of most used Brands

Most used Brands	Percentage of women by Brand
Always	35%
Hygiénix	53%
Amie	35%
Softcare	15 %
Faytex	19 %
Anytime	10%
Eva	6%
Anna	6%
Tioff	23%
Nana	29 %

Places of Purchase



This Figure 3 shows us that women buy their sanitary napkins in supermarkets and shops. The favorite place is the shop.

Brands used according to Age Groups

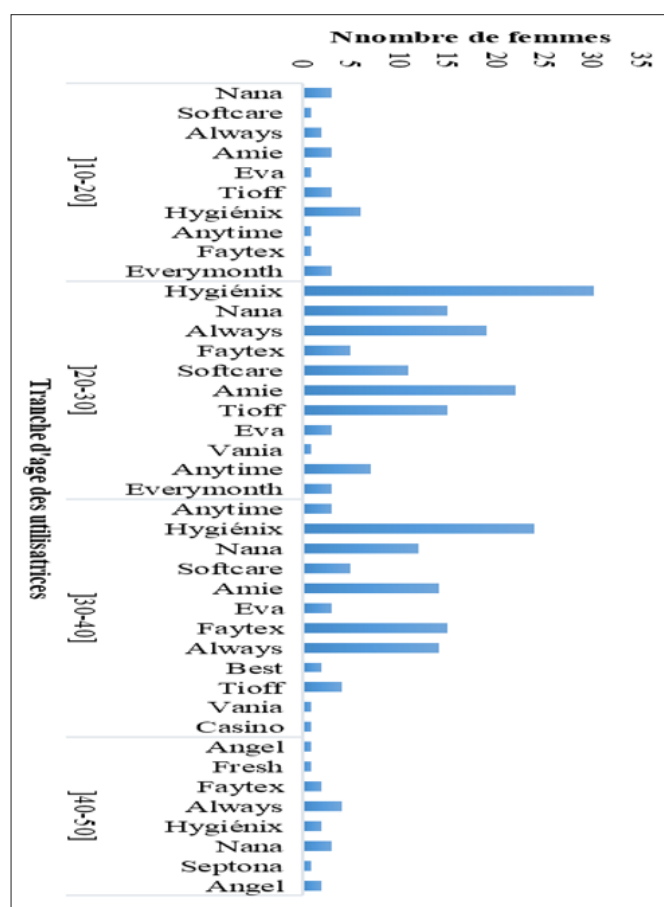


Figure 4: Age group according to Brands used

Data on gynecological problems

Gynecological problems according to brands

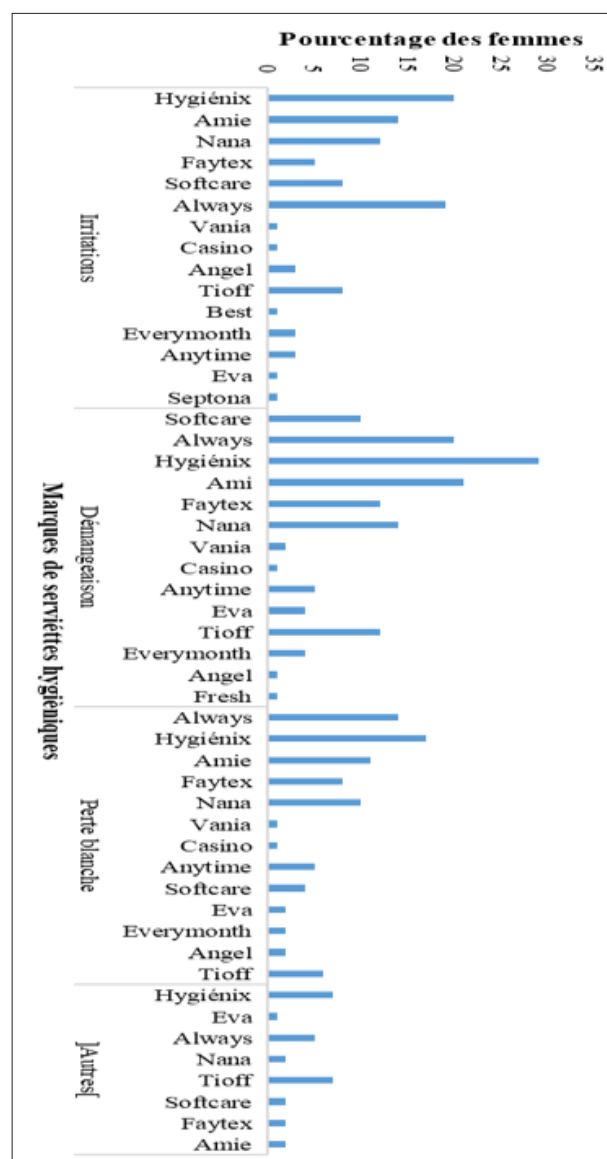


Figure 5: Pathologies encountered according to Intimate Pads

This Figure 5 shows us that the majority of women with irritation, itching and white loss use Hygiénix.

- **Frequency of occurrence of gynecological problems**

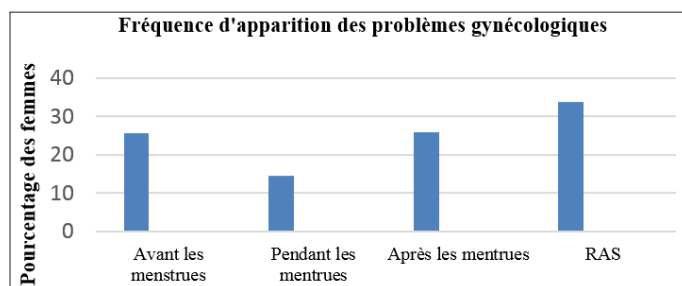


Figure 6: Frequency of occurrence of Gynecological Problems

Gynecological problems appear at any time, but less during menstruation.

- Relationship between gynecological problems and sanitary napkins

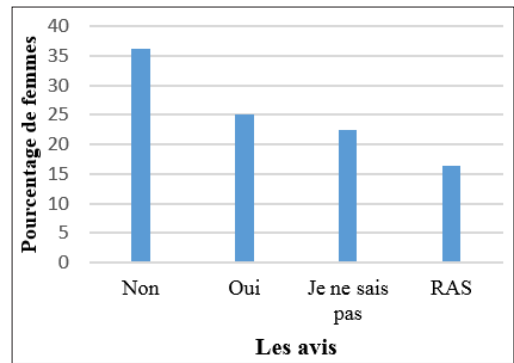


Figure 7: Opinions of women on the relationship between Gynecological Problems and Sanitary Napkins

This Figure 7 shows that 25% of women think there is a relationship between gynecological problems and sanitary napkins.

**Pharmacotechnical Parameters
Organoleptic Characters**

N°	Marques	Poids	Longueur (cm)	Largeur (cm)	Epaisseur (cm)	Couleur	Odeur
1	NANA	11,5g	25	7	2	Blanche	Parfumé
2	TIOF	11,1g	26	7	2	Blanche	Absent
3	HYGIENIX	9,1g	24,3	7	2	Blanche	Parfumé
4	ANYTIME	107,1g	26,5	7	2	Blanche	Absent
5	SOFTCARE	11,6g	28	8	2	Blanche	Parfumé
6	EVA	11,1g	26	7	1	Blanche	Absent
7	ALWAY	10,2	25	6	2	Blanche /Bleu	Absent
8	AMIE	12,8g	26,5	7	2	Blanche	Absent
9	FAYTEX	10,8g	25	6	2	Blanche	Absent
10	ANNA	13,5g	26,3	7	1	Blanche	Absent

All sanitary napkins are white and mostly unscented.

**Labeling Control
Table VI: Results of Labeling Checks**

Boutique	NANA	TIOF	HYG	ANY	SOFT	EVA	ALW	AMIE	FAY	ANNA
NF	PR	PR	PR	PR	PR	PR	PR	PR	PR	PR
NLF	PR	PR	PR	PR	PR	PR	PR	PR	PR	PR
ACF	PR	PR	ABS	PR	PR	PR	PR	PR	PR	PR
NUE	PR	PR	PR	PR	PR	PR	PR	PR	PR	PR
NL	PR	PR	PR	PR	PR	ABS	PR	PR	ABS	ABS
DPE	PR	PR	PR	PR	PR	PR	PR	PR	PR	PR
MEC	ABS	ABS	ABS	PR	PR	ABS	ABS	ABS	ABS	ABS
CO	ABS	ABS	ABS	ABS	ABS	ABS	ABS	ABS	ABS	ABS
Conforme	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON

Supermarché	NANA	TIOF	HYG	ANY	SOFT	EVA	ALW	AMIE	FAY	ANNA
NF	PR	PR	PR	PR	PR	PR	PR	PR	PR	PR
NLF	PR	PR	PR	PR	PR	PR	PR	PR	PR	PR
ACF	PR	PR	ABS	PR	PR	PR	PR	PR	PR	PR
NUE	PR	PR	PR	PR	PR	PR	PR	PR	PR	PR
NL	PR	PR	PR	PR	PR	ABS	PR	PR	ABS	ABS
DPE	PR	PR	PR	PR	PR	PR	PR	PR	PR	PR
MEC	ABS	ABS	ABS	PR	PR	ABS	ABS	ABS	ABS	ABS
CO	ABS	ABS	ABS	ABS	ABS	ABS	ABS	ABS	ABS	ABS
Conforme	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON

**Hydrogen Potential
Table VII: pH according to Towels**

Marques	pH de l'eau	pH serviettes après 5min	pH serviettes après 10min	pH après 4h
Softcare	5,72	5,69	5,79	6,78
Amie	5,72	6,06	6,20	6,94
Anytime	5,72	6,18	6,13	6,54
Eva	5,72	5,95	6,00	6,82
Nana	5,72	5,90	5,83	6,87
Anna	5,74	6,20	6,01	6,70
Faytex	5,74	6,18	6,8	6,72
Tioff	5,74	6,12	7,04	6,72
hygiénix	5,74	6,30	6,30	6,60
Always	5,74	6,31	6,2	6,15

According to Table VII, it can be seen that after 4 hours the pH of the towels varies between 5.6 and 7.04. Tioff towels have a neutral pH while the others have an acidic pH.

**Microbiological Parameters
Table VIII: Detection of Escherichia Coli**

Marques	E. coli
Nana	Absent
Tioff	Absent
Hygiénix	Absent
Always	Absent
Anna	Absent
Amie	Absent
Softcare	Absent
Faytex	Absent
Anytime	Absent
Eva	Absent

This study shows a total absence of Escherichia coli in all the samples tested.

Discussion

This study reveals that of the 116 women interviewed, 51.73% of them were between the ages of 21 and 30, 69.83% were single and 40.52% were pupils or students. These results are different from those obtained during a survey carried out by ANSES in the summer of 2017 among a sample of the French female population [5]. In fact, of the 1,065 women questioned, 67% of them were between the ages of 25 and 50. 54% have an education higher than the baccalaureate.

Intimate protection is a personal purchase, indeed at the end of this study, women mainly buy their pads in stores. The “Hygiénix” brand remains the most used with 53%. Women between the ages of 10 and 40 mainly use the “Hygiénix” brand, while those aged 40 to 50 use the “Always” brand. These results are different from those obtained during a survey carried out by the Agence Nationale de Sécurité Sanitaire Aliment, Environnement Travail in 2017

which noted that French women mainly obtain intimate protection in supermarkets and that 33% of the population questioned used exclusively sanitary napkins at an age between 13-24 years [6]. In addition, the acquisition of towels in shops can be explained by the fact that the most used points of sale in Cameroon are shops. These are more accessible to the population. The use of the brand “Hygiénix” by the 10-40 age group and “Always” by the 40-50 age group could be attributed to the price of the pads.

In terms of frequency of towel change at night and during the day, 69% of women do not change towels all night against 17% during the day, 43% change once at night and 4% twice at night. During the day, 56% change three times, 38% five times and 5% seven times. Indeed, the low frequency of changing towels during 24 hours may be due to the low purchasing power of respondents who are mostly pupils or students. These results are different from those obtained during a survey carried out by Opinio Ways in 2017 among the French female population, in which 5% of French women kept the same towel all day, 36% changed less than 3 hours, 38% all every 3-4 hours and 21% every 5-6. On the other hand, 83% of women kept the same pad at night, 15% once and 2% more than once [7].

Hand washing before a towel change was far from systematic among the respondents. Only 32% of women washed their hands before changing their towel. 19% of women did not wash their hands at all compared to 49% who washed them sometimes. These results differ from those obtained during a survey carried out by ANSE (Opinions Ways) in 2017 where only 61% of women washed their hands before changing protection (24% with water, 50% with soap and 7% with a hydroalcoholic gel). 39% of women did not wash their hands at all [8].

The rate obtained from women who did not wash their hands could be explained by the insalubrity of the different places where the population was; this resulting in the absence of a water point. This rate can also be explained by the ignorance of the population on the fact that hand hygiene can impact the quality of towels during use [9].

Regarding the appearance of gynecological problems, 25.86% declared developing gynecological problems after menstruation against 14.66% during menstruation. As for these gynecological problems, respondents who reported having irritation, itching, white discharge mainly used the brands “Hygiénix”, “Always” and “Amie”. Of the 116 respondents, 25% thought that there is a relationship between the appearance of gynecological problems and the quality of the pads used. But nevertheless the non-respect of hygiene, The high rate of women who do not wash their hands before changing towels, as well as the very low frequency of changing towels at night and during the day; could be at the origin of the appearance of certain gynecological problems [10].

The labeling control showed total non-compliance on all the brands used. Indeed, the absence of clear regulations gives each manufacturer of sanitary napkins free rein to present the label as they wish. Information such as composition, manufacturer’s address, batch number are the most absent.

Conclusion

At the end of our study aimed at evaluating the quality of sanitary napkins sold in the city of Yaoundé, it appears that: thirty-two (32) brands of napkins were identified. The average weight was 11g, 100% of the towels were white, 70% were odorless, 100% of the labels were non-compliant, 100% of the towels had a pH between

[6 – 6.95] after 4 hours of exposure and control of microorganisms showed a total absence of E.coli in all samples tested.

References

1. UNWOMEN (2017) Menstrual Hygiene Management in Humanitarian Settings: The Example of Cameroon <http://menstrualhygineday.org>.
2. Africa green magazine (2021) Dossier Health: The rules environmental and social setbacks <http://www.africagreenmagazine.com/>.
3. Handles (2019) Safety of intimate protection products: Revised opinion from ANSES and revised collective expert report. Scientific edition 294.
4. General Directorate of Consumption Competition and Fraud Repression (2019) Feminine hygiene products: pads, tampons and menstrual cups 2.
5. Safety of intimate protection products revised opinion of ANSES revised collective expert report, December 2019 - scientific edition.
6. Safety of intimate protection products revised opinion of ANSES revised collective expert report, December 2019.
7. Africa green magazine environment and society (2019) Dossier/Health: The rules environmental and social setbacks. Africa green environmental and social magazine.
8. Safety of intimate protection products revised opinion of ANSES revised collective expert report 2019 <https://www.anses.fr>.
9. 60 million consumers (2019) <https://www.google.com/60millions-mag.com.Ftampons-et-protections-feminines-une-reglementation-s-impose->.
10. Directive 2001/95/EC of the European Parliament and of the Council (2001) relating to general product safety which replaced <https://www.legislation.gov.uk/eudr/2001/95/introduction>.