Supporting information to

Does exposure to different types of menstrual protections affect the vaginal environment?

Nicolas Tessandier^{1,2,*}, Ilkay Başak Uysal^{2,#}, Baptiste Elie^{2,#}, Christian
Selinger², Claire Bernat², Vanina Boué², Sophie Grasset², Soraya Groc², Massilva
Rahmoun², Bastien Reyné², Noemi Bender³, Marine Bonneau⁴, Christelle Graf⁴,
Vincent Tribout⁵, Vincent Foulongne⁶, Jacques Ravel⁷, Tim Waterboer³,
Christophe Hirtz⁸, Ignacio G Bravo², Jacques Reynes⁹, Michel Segondy¹⁰,
Carmen Lia Murall^{2,11}, Nathalie Boulle¹², Tsukushi Kamiya^{1,13}, Samuel
Alizon^{1,2,*}

[#] Equal contribution

* Corresponding authors: nicolas.tessandier@college-de-france.fr,

13 samuel.alizon@cnrs.fr

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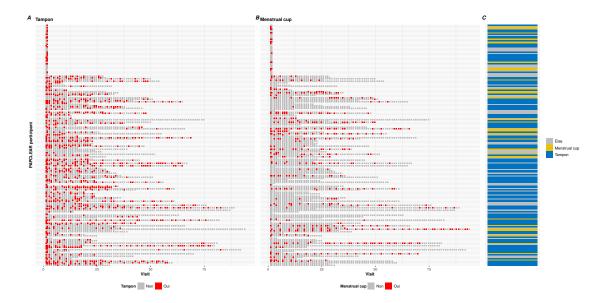


Figure S1: Tampon and menstrual cups usage in the PAPCLEAR cohort longitudinal follow up.

Red dots indicate tampon (A) and menstrual cup (B) self-reported usage by the participants. This data is used to assign a product profile to each participant (C). The profile was assigned if either tampon or menstrual cups were reported more than 75% of the time. For the 51 cases where neither could be assigned, the "Else" category was assigned, and the participants were not included in the present study.

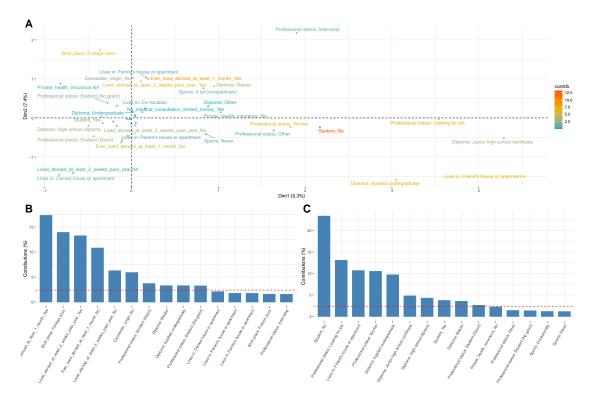


Figure S2: Multiple Correspondence Analysis of socio-economic index A: Position of variables in the two dimensional space and their relative contribute to the MCA of socio-economic index (Figure 1B). B and C: Percentage of contributions to dimension 1 (B) and dimension 2 (C) of the MCA analysis.

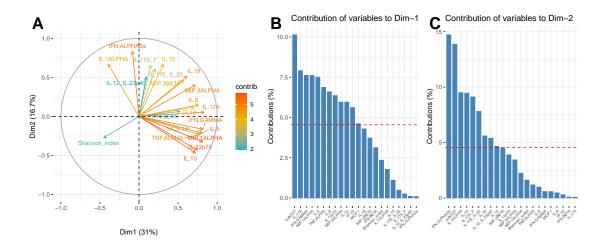


Figure S3: Contributions of covariates to the FAMD analysis in Figure 3B A: Graph of variables vectors and their relative contribution to the FAMD analysis in Figure 3B. B and C: Percentage of contributions to dimension 1 (B) and dimension 2 (C) of the FAMD analysis in Figure 3B)

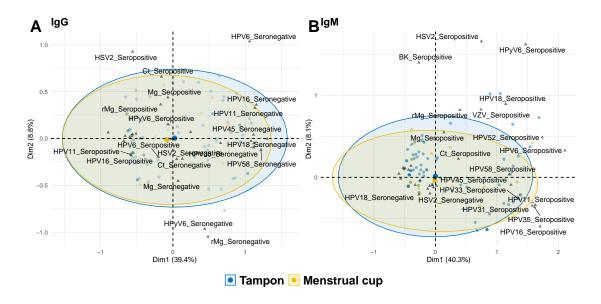


Figure S4: Multiple Correspondence Analysis of seropositivity for diverse STI antibodies

A: IgG and B: IgM seropositivity for a panel of STI antibodies. Antibodies included are the following. Human papillomarivus: (anti-HPV6, anti-HPV11, anti-HPV16, anti-HPV18, anti-HPV31, anti-HPV33, anti-HPV35, anti-HPV45, anti-HPV52 and anti-HPV58); Human polyomavirus: (anti-BK and anti-HPyV6), Human Herpes simplex virus: (anti-HSV2 and anti-VZV); Chlamydia trachomatis: (anti-Ct) and Mycoplasma genitalium: (anti-Mg and anti-rMg). Ellipses indicate 95% confidence intervals.

Table S1: Covariates used in the Generalised Linear Models (GLM). These models either have menstrual cups usage or fungal infections are a response variable. We used all the combinations of covariates as explanatory variables. The best model was selected, for each response variable, using AICc. The last covariate (fungal infection) was not used in the model where it was used as an explanatory variable.

Covariate	Data type	Values	Description	source
Number of partners over the last 12 months	Numeric	1 to 20	Number of partners over the last 12 months	Questionnaire at inclusion visit
Lifetime number of partners	Numeric	1 to 63	Lifetime number of partners	Questionnaire at inclusion visit
Smoking	Categorical	No/Occasionally/ Often	Self-reported smoking habit	Questionnaire at inclusion
Intercourse with an occasional partner (last two weeks)	Binary	Yes/No	Intercourse with an occasional partner during the past two weeks	Questionnaire at each visit
HPV vaccinated	Binary	Yes/No	Vaccinated against HPV	Questionnaire at inclusion visit
HPV focal	Binary	Yes/No	DEIA positive for at least one HPV genotype at two consec- utive visits	Laboratory testing
Age	Numeric	18:25	Self-reported age at inclusion	Questionnaire at inclusion visit
Lubricant (last two weeks)	Binary	Yes/No	Self-reported using sexual lubricant during past two weeks	Questionnaire at each visit
HPV positive (multiple HPV)	Binary	Yes/No	DEIA positive for at more than one HPV genotype	Laboratory testing
Antibiotics (last two weeks)	Binary	$\rm Yes/No$	Used antibiotics during the past two weeks	Questionnaire at each visit
Intercourse with a regular partner (last two weeks)	Binary	Yes/No	Self-reported intercourse with a regular partner during past two weeks	Questionnaire at each visit
Menses (last two weeks)	Binary	Yes/No	Self-reported menses during past two weeks	Questionnaire at each visit
Stress level (last week)	Categorical	0 (Min), 1, 2, 3 (Max)	Self-reported stress level during past week	Questionnaire at each visit
Menstrual protection	Binary	Menstrual cup/ Tampon	Self reported used menstrual cup or tampon over past two weeks	Questionnaire at each visit
Fungal infection	Binary	Yes/No	Recent diagnostic (over the last 3 months)	Questionnaire at each visit

Variable name	Description	Levels
Birth place	Place of birth	French-born / Foreign-born
$Ever_lived_abroad_at_least_1_month$	Ever lived abroad at least 1 month	Yes / No
$Lived_abroad_at_least_2_weeks_past_year$	Lived abroad at least two weeks in the past year	Yes / No
Caucasian_origin	Of Caucasian origin	Yes / No
Diploma	Highest diploma	Junior high school certificate / High school diploma / Applied undergraduate / Undergraduate / Master / Other
Student	Currently a student	Yes / No
Lives in	Current habitation status	Co-location / Family's house or apartment / Friend's house or apartment / Oncampus residence / Owned house or apartment / Parent's house or apartment / Rental house or apartment
Private_health_insurance	Has a private health insurance	Yes / No
Sports	Sports practice	Never / Rarely / Regularly / Occasionally / A lot (competitively)
$Consulted_specialist_doctor_last_12_months$	Ever consulted a medical specialist last 12 months	Yes / No
$No_medical_consultation_limited_money$	Refrained from consulting a doctor because too expansive (past 12 months)	Yes / No
Professional_status	Professional status	Looking for job / Internship / Student (Grant) / Student (No grant) / Worker / Other

Table S2: Variables used in Multiple Correspondence Analysis clustering (Figure S2)

Description of the variables used in Multiple Correspondence Analysis clustering in Figure S2.

Table S3: Covariable presence and statistical significance in the 84 best models (model from Figure 1A) selected by AICc (AICc+5)

Model [1]: Menstrual cup	Presence in best models (#)	Presence in best models (%)	$\begin{array}{l} \text{p.value} \\ < 0.1 (\%) \end{array}$	$\begin{array}{c} \text{p.value} \\ < 0.05 (\%) \end{array}$
Age at first visit	71	84.52	84.52	80.95
Smoking (Often)	51	60.71	60.71	59.52
Smoking (Occasionally)	51	60.71	0.00	0.00
Lifetime number of partners	45	53.57	0.00	0.00
Age at first intercourse	33	39.29	0.00	0.00
Vaccinated against HPV	31	36.90	0.00	0.00
Age at menarchy	29	34.52	0.00	0.00
Number of partners (last 12 months)	22	26.19	0.00	0.00
Ever HPV positive	21	25.00	0.00	0.00

15 Genital infection (past 3 months)

Table S4: Best model selected for covariates associated with genital infect ion (past 3 months)

Covariate	OR	OR SE	CI 2.5%	CI 95%	p.value	
Antibiotics (last two weeks)	13.005	16.025	1.110	173.282	0.037	*
HPV (focal)	2.51e + 8	7.97e + 11	0.000	NA	0.995	
Lifetime number of partners	0.967	0.065	0.803	1.068	0.618	

16 Chlamydia

Table S5: Best model selected for covariates associated with chlamydia infe ction

Covariate	OR	OR SE	CI 2.5%	CI 95%	p.value	
Antibiotics (last two weeks)	27.232	37.122	1.978	541.103	0.015	*
HPV (focal)	2.04e + 8	$6.23e{+}11$	0.000	NA	0.995	
Lifetime number of partners	1.007	0.059	0.856	1.110	0.906	

$_{17}$ HPV

Table S6: Best model selected for covariates associated with HPV infection

Covariate	OR	OR SE	CI 2.5%	CI 95%	p.value
HPV (focal)	1.03e + 9	2.03e + 12	0.000	1.21e + 275	0.992
HPV (multiple)	4.04e + 8	$8.81e{+11}$	0.000	NA	0.993
Lifetime number of partners	1.051	0.030	0.997	1.120	0.080

18 Urinary tract infection

Table S7: Best model selected for covariates associated with UTI infection

Covariate	OR	OR SE	CI 2.5%	CI 95%	p.value	
Lubricant (last two weeks)	2.904	1.971	0.700	10.689	0.116	
HPV (focal)	3.108	1.868	0.974	10.591	0.059	
Vaccinated against HPV	2.853	1.760	0.896	10.462	0.089	
Lifetime number of partners	0.960	0.035	0.884	1.021	0.262	

19 Vaginosis

Table S8: Best model selected for covariates associated with vaginosis

Covariate	OR	OR SE	CI 2.5%	CI 95%	p.value	
Menstrual cup	9.333	12.178	0.775	221.501	0.087	
HPV (multiple)	0.000	0.000	NA	Inf	0.998	
Vaccinated against HPV	0.000	0.000	NA	NA	0.997	