Supporting information

Direct identification of forensic body fluids by MALDI-MS

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CONTENT:

Table S1: An overview of the information including age and gender of all volunteers.

volunteers	gender	age
1	male	20~30
2	male	20~30
3	male	15~20
4	female	20~30
5	female	20~30
6	male	40~50
7	female	30~40
8	female	20~30
9	male	20~30
10	male	40~50
11	male	40~50
12	male	15~20
13	male	30~40

*there are nine samples for each body fluid type, some volunteers only provide a kind of body fluids.

Table S2. Repeatability and reproducibility test of the MALDI methods for human body fluids identification.

m/z	Body fluid	Repeatability shot-to-shot RSD	Reproducibility sample to sample RSD
615	Blood	6.7%	20.4%
650		5.5%	17.8%
191	Semen	0%	0%
146		4.8%	15.2%
215		5.7%	13.8%
154		6.4%	21.7%
175		8.7%	18.3%
795		8.5%	17.8%
788		7.1%	14.4%
191	Urine	3.7%	5.9%
167		5.7%	12.9%
203		10.3%	27.9%
97	Saliva	5.3%	21.3%
133		8.1%	22.7%
215		11.2%	22.5%
89	Sweat	4.7%	11.4%
125		7.1%	13.5%

a. The repeatability (shot-to-shot RSD) was measured based on 20 shots at different locations on the spot.

b. The reproducibility (sample-to-sample RSD) was measured based on 15 spots (5 samples) in different batches.

c The RSDs were obtained by the relative peak intensity to the strongest peak of selected peaks in MALDI-TOF MS.

Table S3. An overview of the predicted and actual body fluid types of the ten tested samples.

Unknown body fluid samples	Predicted type	Actual type
1	Seminal fluid	Seminal fluid
2	urine	urine
3	saliva	saliva
4	urine	urine
5	sweat	sweat
6	unknow	saliva
7	blood	blood
8	blood	blood
9	sweat	sweat
10	Seminal fluid	Seminal fluid

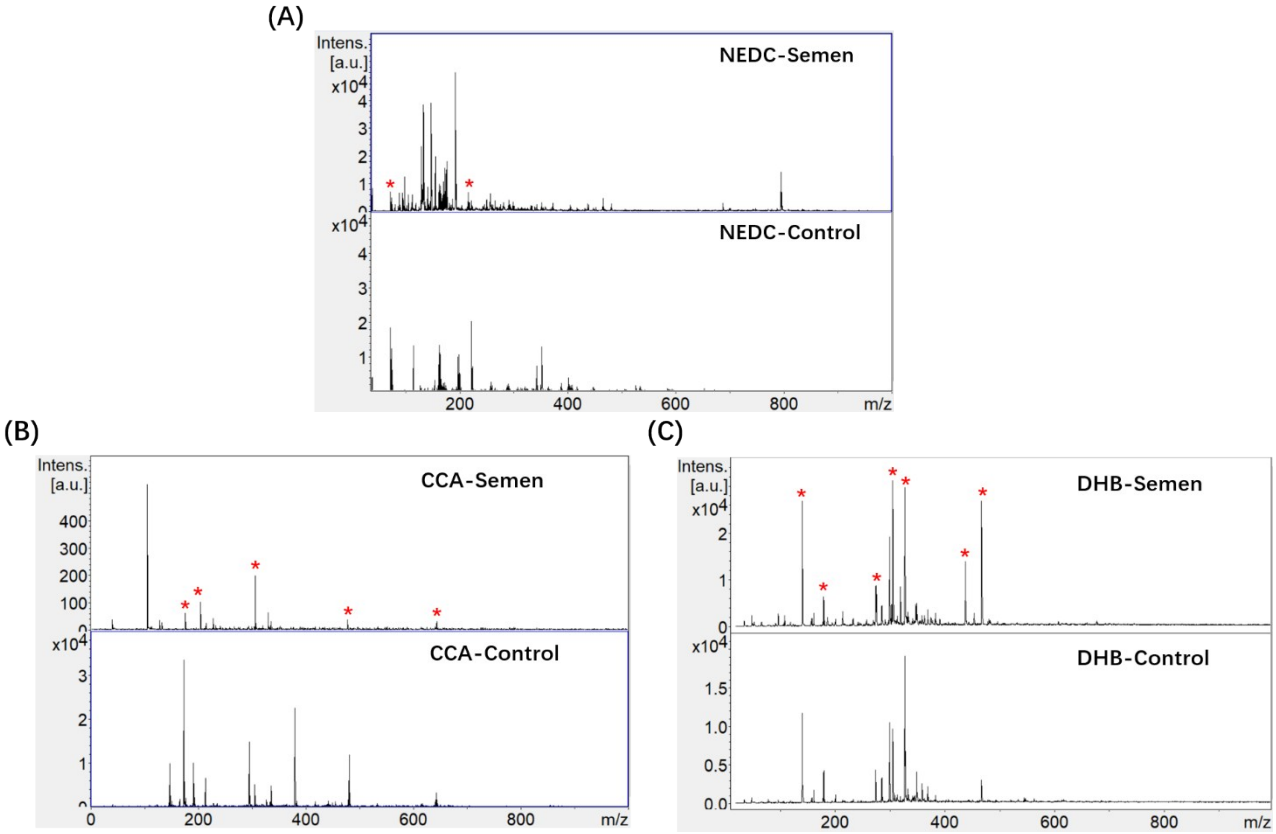

Figure S1. Mass spectrum of seminal fluid with different matrixes (A) NEDC . (B) CHCA . (C) DHB. The red star symbols represent background interference peaks.

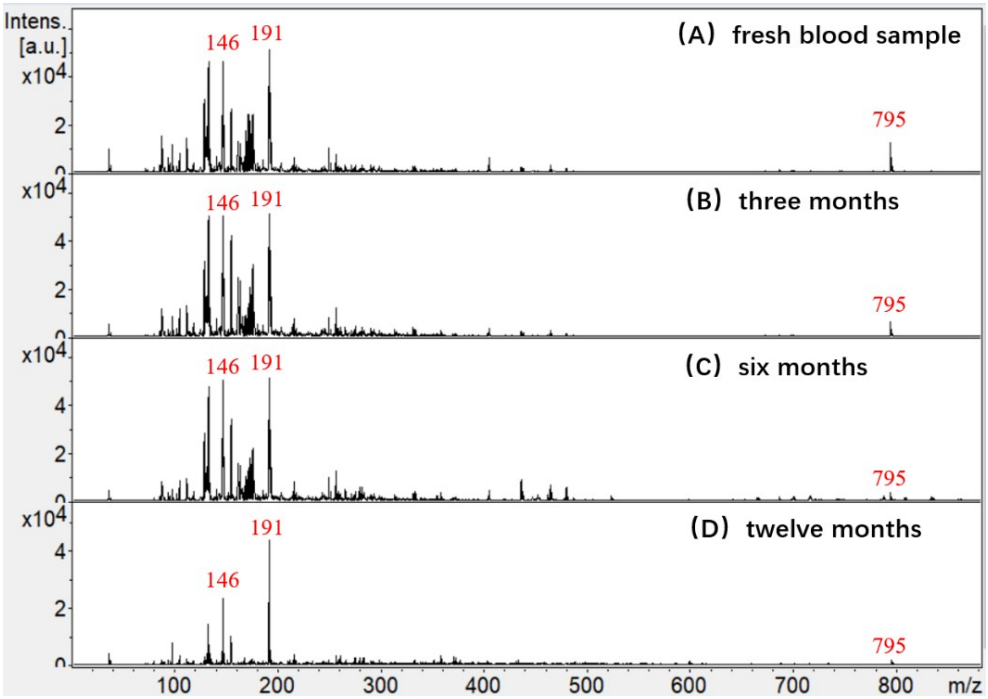

Figure S2. Mass spectra of seminal fluid with different storage time. (A) fresh blood sample. (B) storage for three months. (C) storage for six months. (D) storage for a year. The peaks that are labeled represents the characteristic peaks of seminal fluid.

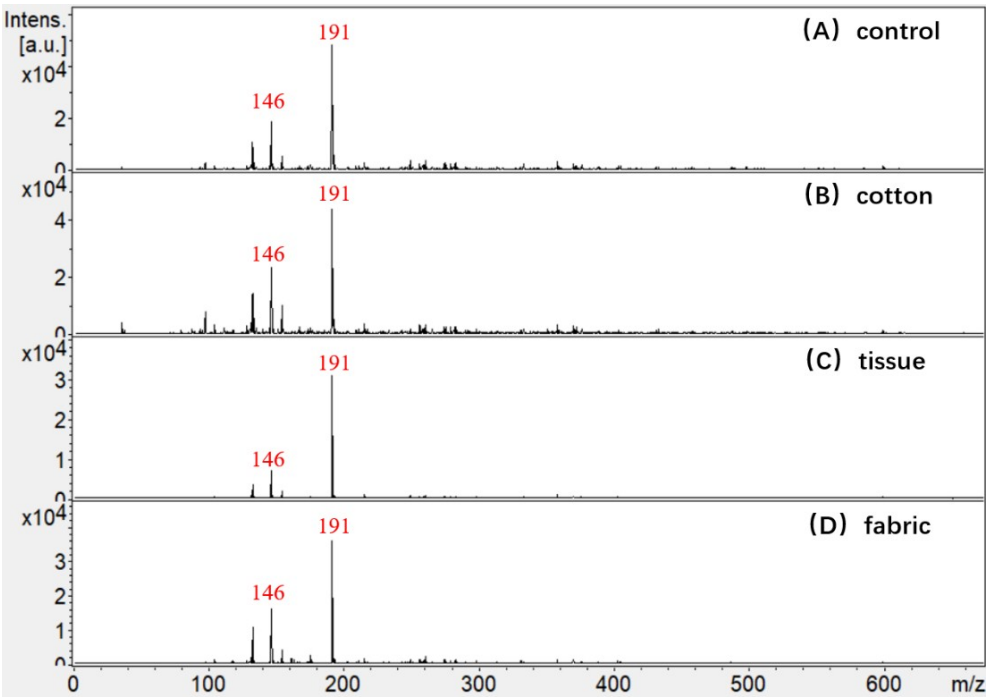

Figure S3. Mass spectra of seminal fluid deposited on different materials. (A) no deposition. (B) cotton (C) tissue (D)fabric. The peaks that are labeled represents the characteristic peaks of seminal fluid.

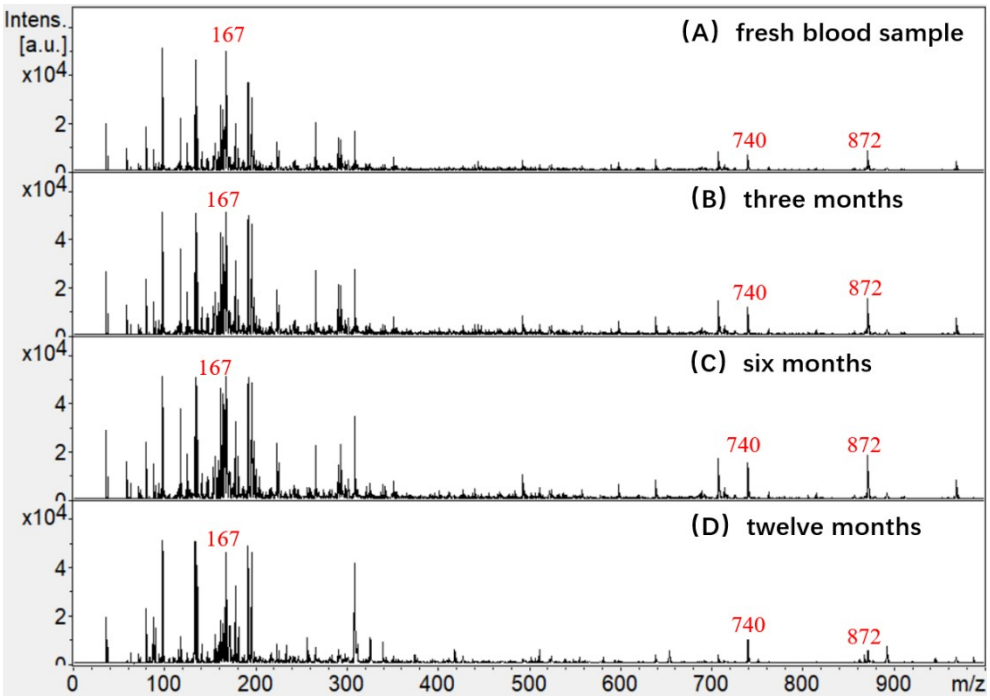

Figure S4. Mass spectra of saliva with different storage time. (A) fresh blood sample. (B) storage for three months. (C) storage for six months. (D) storage for a year. The peaks that are labeled represents the characteristic peaks of saliva.

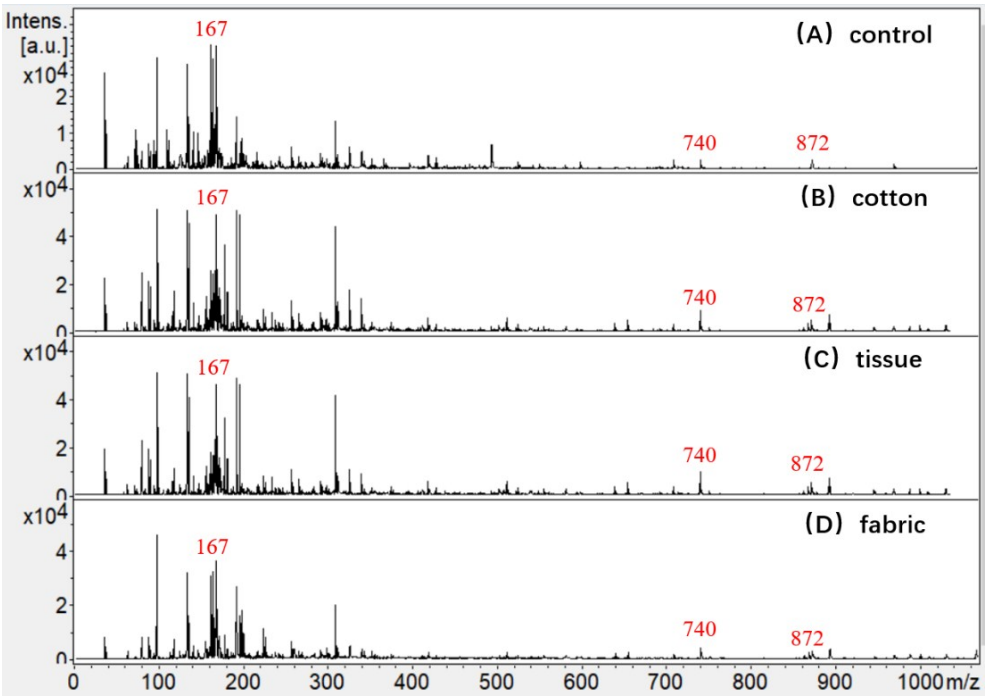

Figure S5. Mass spectra of saliva with different storage time. (A) fresh blood sample. (B) storage for three months. (C) storage for six months. (D) storage for a year. The peaks that are labeled represents the characteristic peaks of saliva

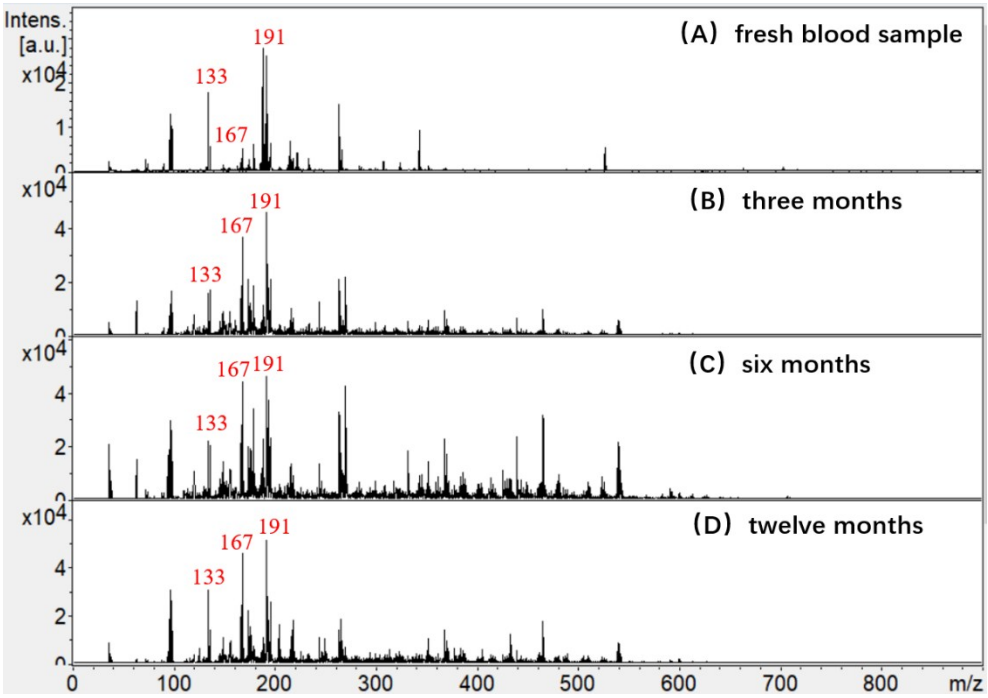

Figure S6. Mass spectra of urine with different storage time. (A) fresh blood sample. (B) storage for three months. (C) storage for six months. (D) storage for a year. The peaks that are labeled represents the characteristic peaks of urine.

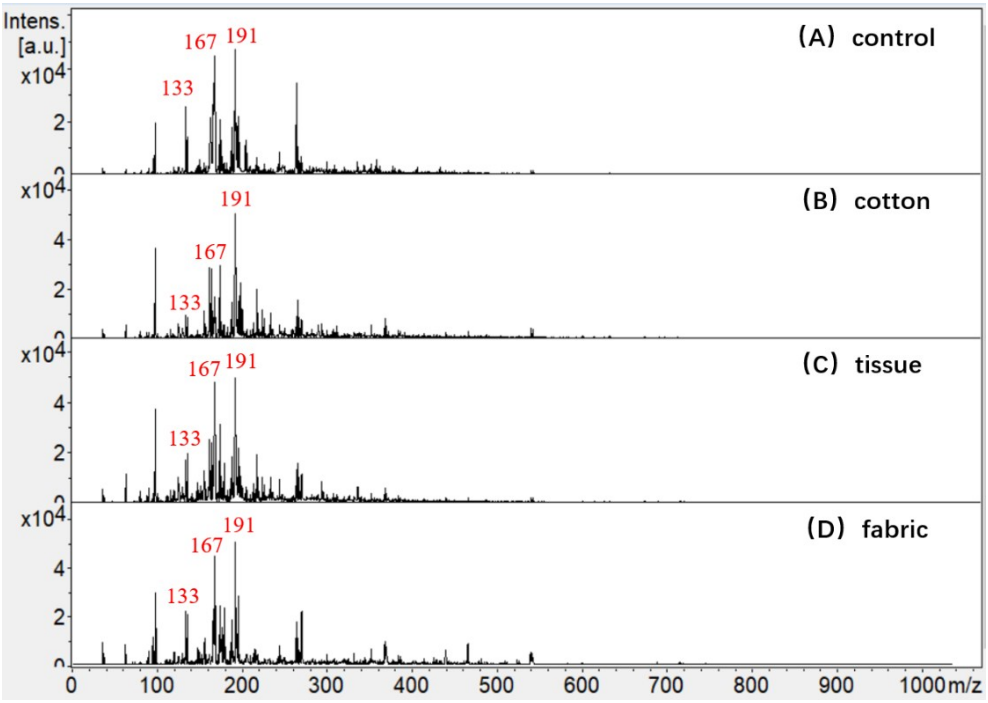

Figure S7. Mass spectra of urine with different storage time. (A) fresh blood sample. (B) storage for three months. (C) storage for six months. (D) storage for a year. The peaks that are labeled represents the characteristic peaks of urine.

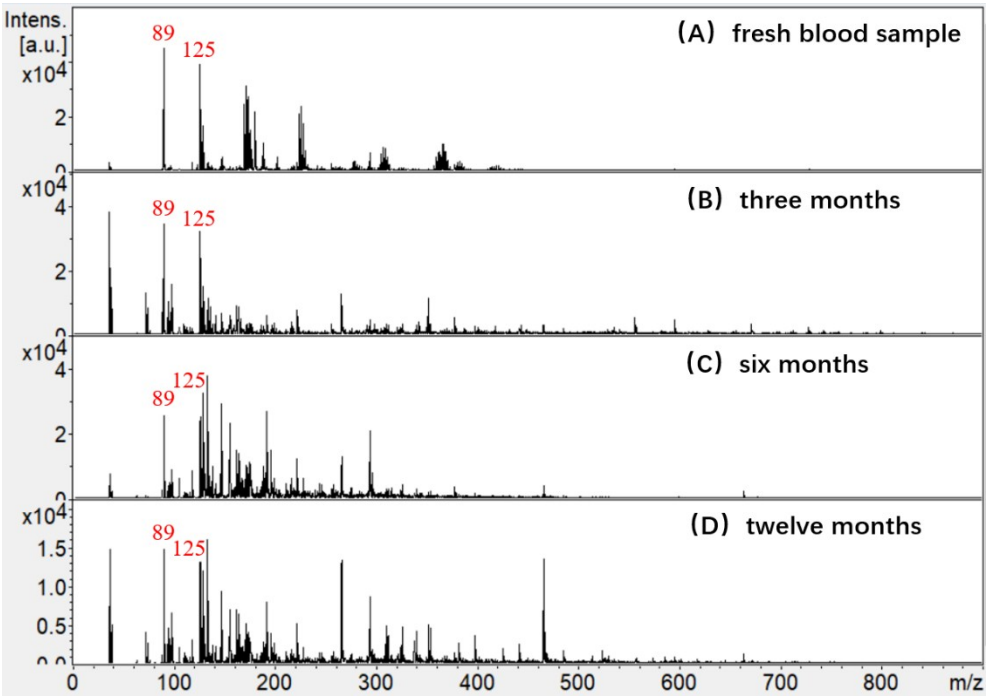

Figure S8. Mass spectra of sweat with different storage time. (A) fresh blood sample. (B) storage for three months. (C) storage for six months. (D) storage for a year. The peaks that are labeled represents the characteristic peaks of sweat.

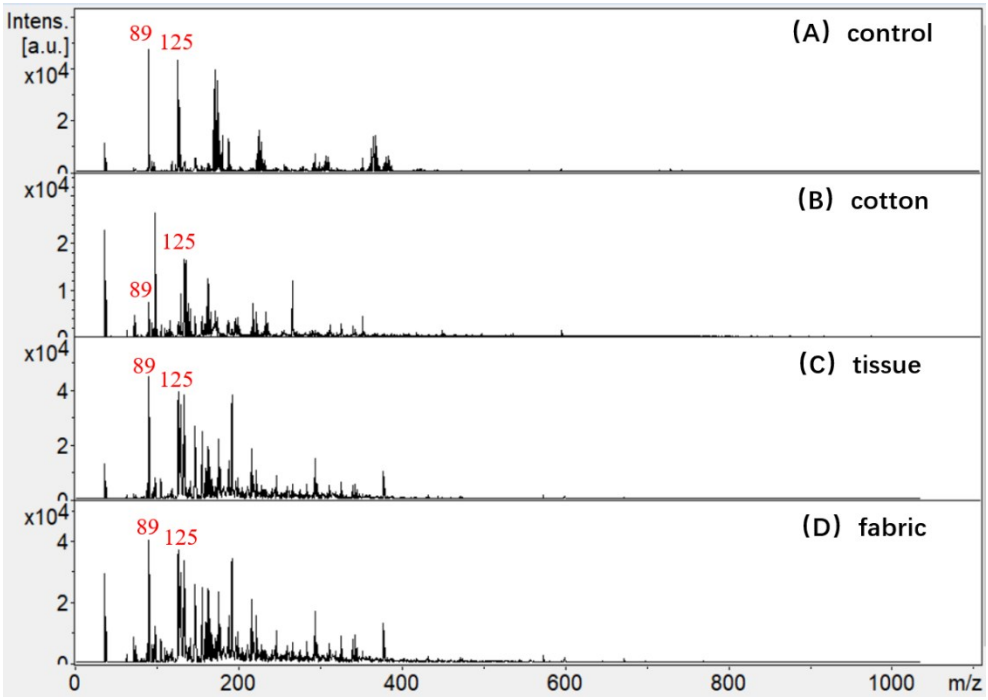

Figure S9. Mass spectra of sweat with different storage time. (A) fresh blood sample. (B) storage for three months. (C) storage for six months. (D) storage for a year. The peaks that are labeled represents the characteristic peaks of sweat.

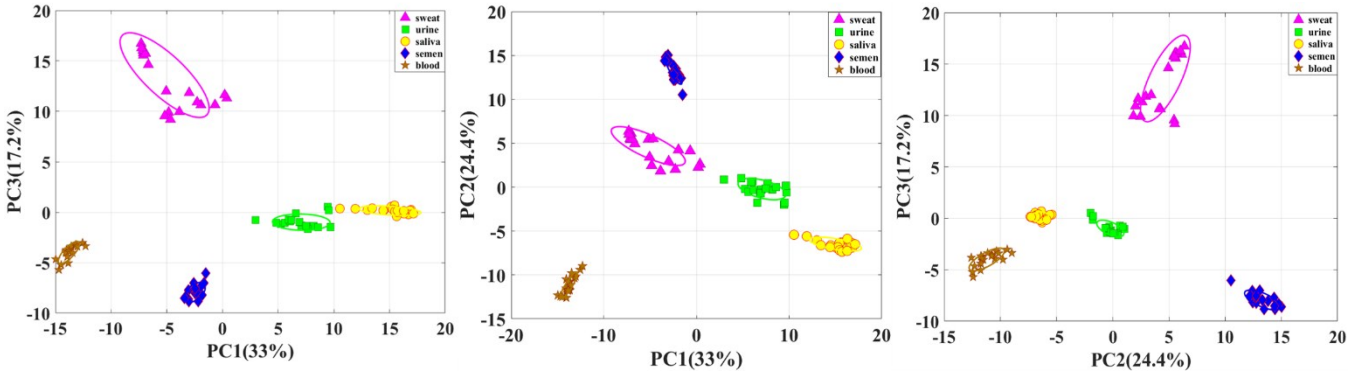

Figure S10. 2D plots of the principle component analysis (PCA) scores for the matrix assisted laser desorption ionization mass spectrometry (MALDI-MS) data from five kinds of body fluids.

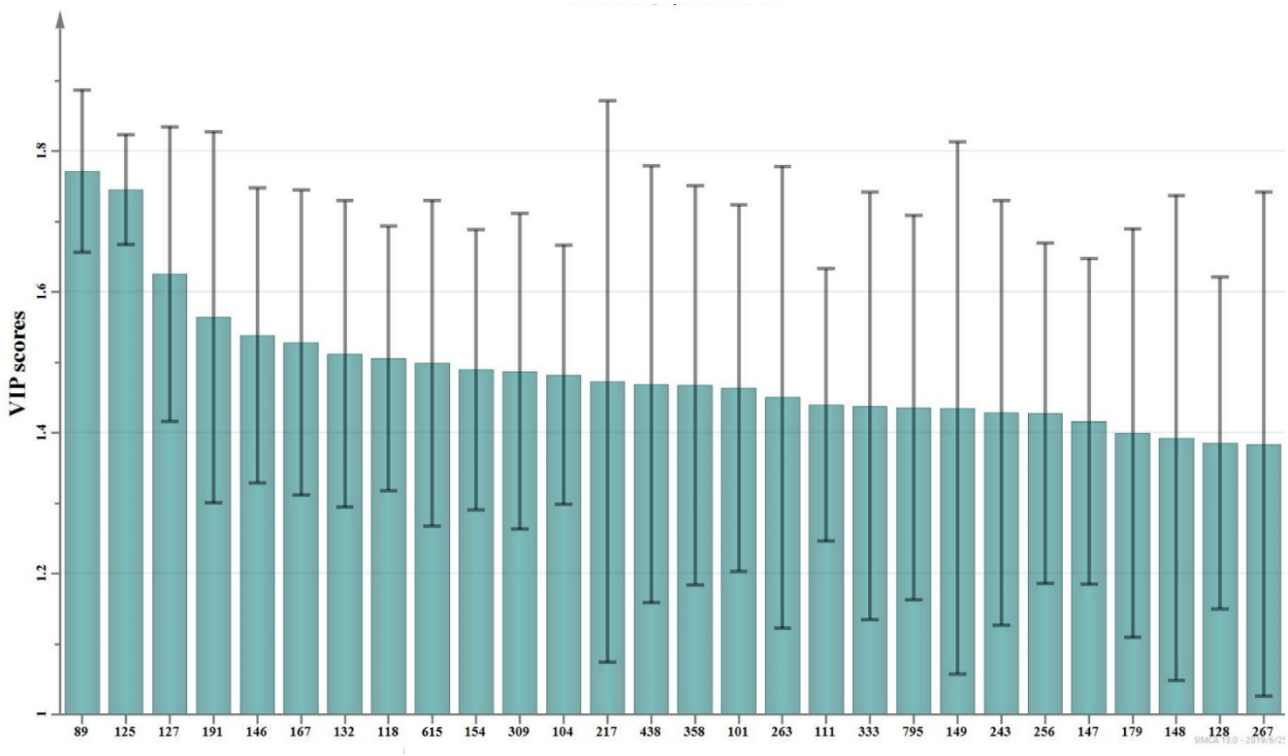

Figure S11. Variable importance for the projection (VIP) scores from partial least-squares discriminant analysis (PLS-DA) for MS data from five kinds of human body fluids.

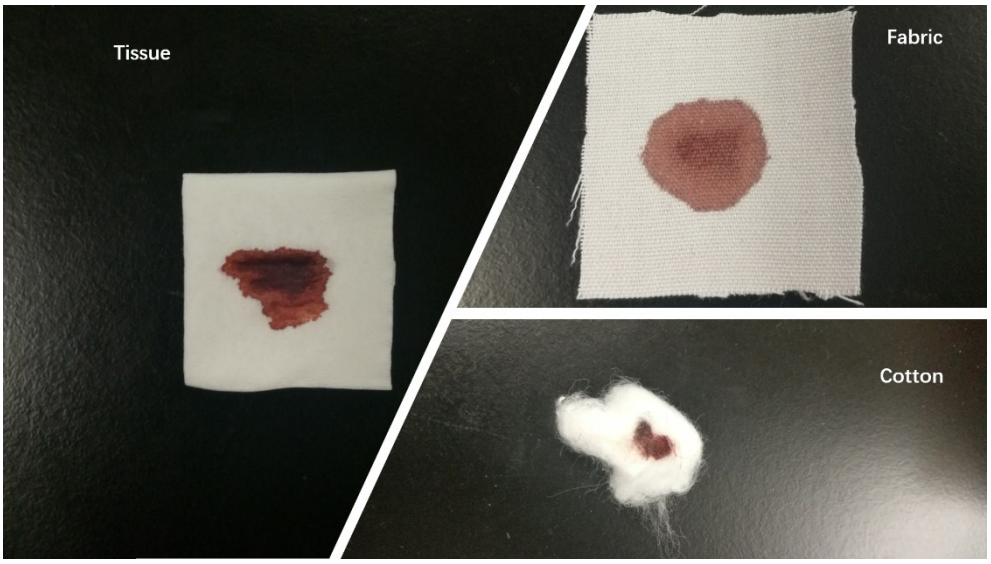

Figure S12. Photographs of human body fluids deposited on different materials.

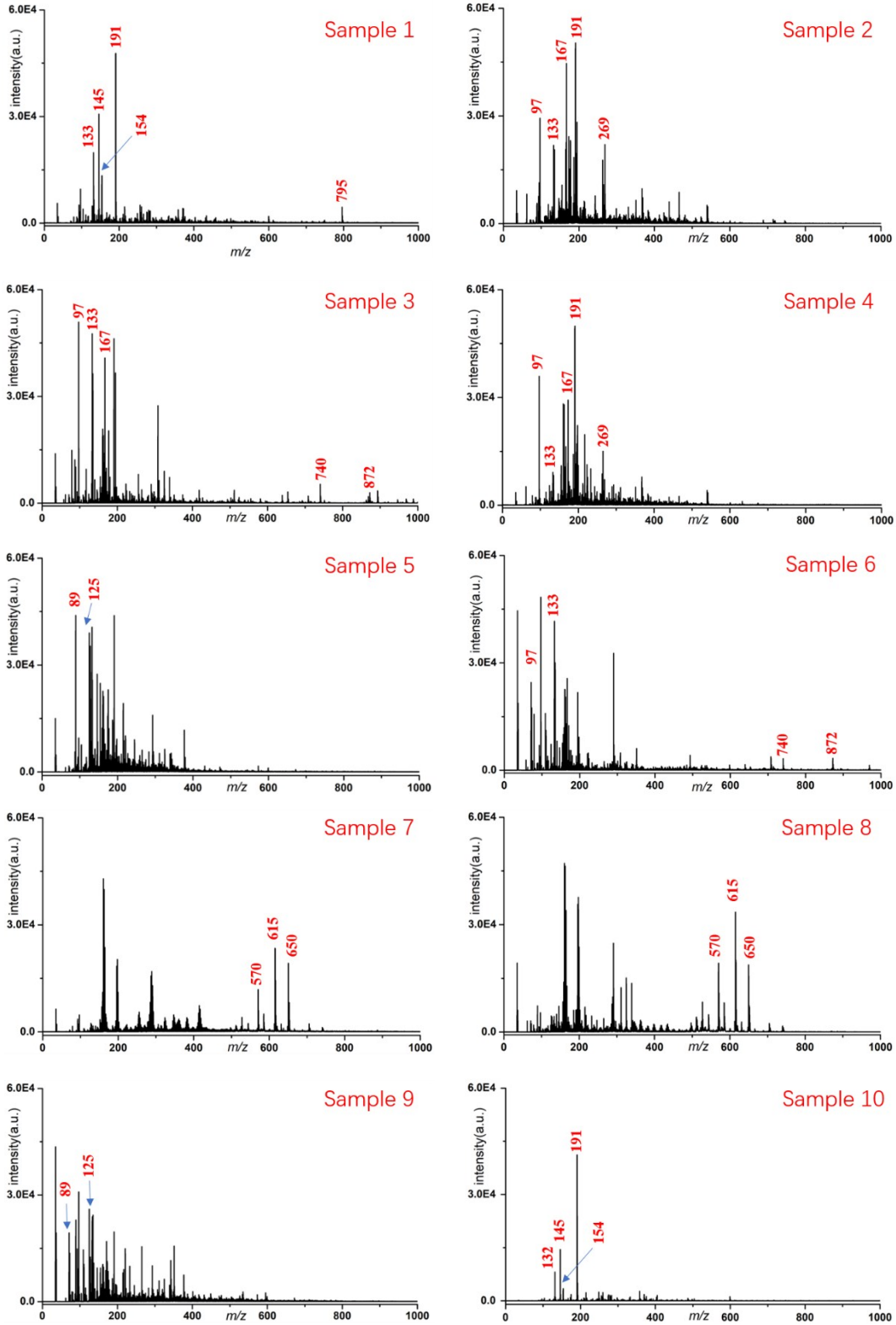

Figure S13. Mass spectra of ten unknown human body fluid samples deposited on different carrier materials.