Supplementary materials

Rapid detection of ractopamine and salbutamol in swine urine by immunochromatography based on selenium nanoparticles

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1. Results of nucleoprotein purification and activity verification

The optimal pH of the selenium nanoparticles kit for SAL detection was determined to be a pH of 8.0 (Figure 1A, 1B) and the optimal labelling concentration for the selenium nanoparticles kit for SAL detection was determined to be 4.0 μ g/ml (Figure 1C, 1D).



Figure 1 Optimal pH and labelling concentration of the salbutamol kit. Detection results at different pH values (A, B) and concentrations (C, D) by salbutamol (SAL) kits. C: Control line; T: Test line; Ab: Antibody; Orange boxes: Best color rendering results.

2. Detection results for SAL and RAC by commercial kits

The sensitivity result for salbutamol and ractopamine with a commercial kit based on colloidal gold was 4 ng/mL (Figure 2A, 2B) and 3ng/mL (Figure 2C, 2D), respectively.



Figure 2 Detection results for SAL (A, B) and RAC (C, D) by commercial kit based on colloidal gold. C: Control line; T: Test line. Purple box: Result for sensitivity detection.

3 Basic information of fitting curve and OD₄₅₀ for table 1

Different concentrations (0, 0.1, 0.3, 0.9, 2.7 and 8.1 ppb) standard were detected with RAC ELISA kit and SAL ELISA kit.

The fitting curve was shown in Figure 3A (RAC) and Figure 3B (SAL). The OD values of SAL and RAC detection with 0.5ng/mL and 1.0 ng/mL of 3 tests are shown in Table 1.



Figure 3 Fitting curve for RAC (A) and SAL (B)

	Category	OD450					
Standard (ng/	mL)	1	2	3			
D AC	0.5	1.1736	1.2352	1.1968			
KAC	1.0	0.9764	0.9386	1.0249			
CAL	0.5	1.0876	0.9858	0.9670			
SAL	1.0	0.6286	0.6521	0.7132			

Table 1 OD₄₅₀ of recovery experiment for RAC and SAL

4. RAC and SAL content of sample for figure 7

16 swine urine were detected by ELISA kit, and the OD₄₅₀, content of RAC and SAL were shown in Table 2 and Table 3; RAC and SAL concentration is calculated according to Figure 3A and Figure 3B, respectively.

Tuble 2 Detection result by ELIST kit for Refe								
Sample number	1	2	3	4	5	6	7	8
OD ₄₅₀	1.7640	1.6669	1.8493	1.7616	1.7719	1.6739	1.7717	1.6348
C(ng/mL)	0.0982	0.1318	0.0758	0.0989	0.0958	0.1291	0.0959	0.1453
Sample number	9	10	11	12	13	14	15	16
OD ₄₅₀	1.7775	1.6791	1.6391	14432	1.4623	1.5771	1.6692	1.5982
C(ng/mL)	0.0942	0.1270	0.1434	0.2584	0.2454	0.1732	0.1309	0.1624

Table 2 Detection result by ELISA kit for RAC

Table 3 Detection result by ELISA kit for SAL								
Sample number	1	2	3	4	5	6	7	8
OD ₄₅₀	0.9745	1.4057	1.2779	2.1284	2.3426	1.5248	1.4976	2.1011
C(ng/mL)	0.5281	0.2374	0.2933	0.1072	0.0974	0.1988	0.2067	0.1097
Sample number	9	10	11	12	13	14	15	16
OD ₄₅₀	2.0879	1.9646	1.6969	1.6307	1.9671	2.4822	1.8954	2.1589
C(ng/mL)	0.1107	0.1214	0.1590	0.1724	0.1211	0.0942	0.1290	0.1059

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