1. Introduction
Veterinary drugs are used for therapeutic and growth promotion purposes for animals or fishes. To provide assurance that food from animals is safe in regard to veterinary medicine residues, regulatory authorities have established Maximum Residue Limits (MRL) for certain drugs in target tissues and animal species. Veterinary drugs analysis commonly uses liquid chromatography coupled to mass spectrometer which is fast, highly sensitive and highly selective. This work describes a rapid adaptation of high-throughput LC/MS/MS system utilizing fast polarity switching. Faster and high precision total workflow was investigated with QuEChERS method combined with solid-phase extraction cartridge to enhance purification efficiency.

2. Methods and Pretreatment
Chicken, pork and beef were selected for recovery tests of veterinary drugs. Evaluation of analytical system and recovery test used 129 veterinary drugs spiked in meat (1:25 ppb in vsal). Solid phase extraction Technique with QuEChERS method (STQ method) was fully automated solid phase extraction system (STQ-L405, AIST SCIENCE, Japan). LC and MS conditions are shown in Table 1. ODS column and Biphenyl column were used to evaluate the peak shape and separation.

3. Results
Comparison of ODS column and Biphenyl column

Recoveries of Veterinary Drugs in Chicken, Pork and Beef
Purified extract from chicken, pork and beef were assayed using LC/MS/MS using an ODS column. The peak area of standard and post-spiked sample were compared for matrix effects. The peak area of pre-spiked sample and post-spiked sample was compared for recovery rates. The combination of standard, pre-spiked and post-spiked sample were diluted at the concentration of 1.25 ppb. 94 drugs were obtained from each sample. The results indicated that 82% of the compounds in chicken, 85% of the compounds in pork and 84% of the compounds in beef were recovered from each sample. Stabile and good recovery rates were achieved with fully automated STQ method.

Table 2. Typical results of matrix effects and recovery tests (%).

5. Conclusion
- 129 veterinary drugs were detected using ODS column and Biphenyl column with 18 min.
- 82% of the compounds in chicken, 85% of the compounds in pork and 94% of the compounds in beef were recovered from 70 to 120% (n=3).
- Chromatograms of alpha-trenbolone and sulfisoxazole using ODS column and biphenyl column (STQ-L405, AIST SCIENCE).
- Fully automated solid phase extraction achieved minimized matrix effect with sufficient recovery rates.

Fig. 1. LC-MS/MS system (Nexera X2-CLC-MS/MS, Shimadzu Corporation).

Fig. 2. Methods and Pretreatment

Fig. 3. MS Chromatogram of 129 veterinary drugs (10 ppb) using ODS column and Biphenyl column.