

TECH OFFER

Rapid Nitrofurans Detection Kit



OVERVIEW

Nitrofurans are synthetic antibiotics that have been widely used in veterinary medicine to treat bacterial infections in animals. However, due to concerns about their potential harmful effects on human health, many countries have banned their use. As a result, it is important to detect nitrofurans residues in food products to ensure food safety and prevent potential health risks.

The aptasensor colorimetric detection kit for nitrofurans (NFs) residues provides high specificity and sensitivity of NFs contaminants in fisheries products and honey. This kit enables the rapid extraction of NFs within 5 hours, without requiring sophisticated equipment. The kit also allows for rapid detection within 5 minutes, with the assistance of a mobile phone image analyzer application, making it ideal for on-site detection.

The sensitivity of detection reaches 0.3 ppb, which is in line with the Minimum Required Performance Level (MRPL), allowing this kit to be used as a screening kit for NFs. Compared to the standard method, LC-MS/MS, this kit reduces the cost of operation by 10 times (from 100 USD to 10 USD) and reduces the time of operation (from 18 hours to 6 hours). Additionally, this kit does not require sophisticated scientific equipment.

The technology provider is seeking R&D collaboration partners with the farming and feed production industry to self-determine NFs contaminants prior to harvesting or selling their products.

TECHNOLOGY FEATURES & SPECIFICATIONS

The nitrofurans aptasensor colorimetric detection technology includes several key features:

1. **Specificity:** The aptamer is specific to nitrofurans and does not react to other chemicals.
2. **Efficient and rapid NFs extraction:** The chemical extraction process has been shortened to 5 hours using a special equipment-free method.
3. **Rapid detection:** The color change can be observed within 30 seconds and is easy to visualize.
4. **Quantitative:** Image analysis on a mobile phone application assists in the quantitative analysis of NFs contaminants with standard.
5. **Acceptable accuracy:** The accuracy of the detection is more than 95% and complies with the gold standard method.

POTENTIAL APPLICATIONS

The aptasensor nitrofurans detection kit is a convenient, economical, and instrument-free alternative for screening nitrofurans (NFs) contaminants in fisheries products. This kit allows farmers, frozen units, and animal feed production companies to monitor NFs contaminants more frequently and efficiently.

The potential customers of our nitrofurans aptasensor colorimetric detection include:

1. **Frozen food import and export businesses:** These businesses can screen the contaminants in fisheries products to reduce the cost of operations. The time of LC-MS/MS determination by the private sector is 14 days (100 USD). If the sample is found positive for NFs, it requires repeat analysis (another 14 days with another 100 USD). Therefore, the maximum waiting time for NFs analysis is 28 days, during which the frozen products are kept in the frozen unit, incurring additional costs.
2. **Animal feed production (live and feed pellet):** These companies can screen and monitor the contaminants in live feed such as artemia and raw materials of feed pellet production to ensure there is no NFs contamination.
3. **Local farmers:** Local farmers can screen and monitor the contaminants in animals to avoid harvesting NFs- contaminated aquatic animals that cannot be exported.

UNIQUE VALUE PROPOSITION

The nitrofurans aptasensor colorimetric detection kit is a new on-site detection kit for nitrofurans, which is a class of antibiotics that are banned in many countries due to their potential to cause cancer. The kit offers several advantages over existing methods, including:

- Shorter nitrofurans extraction time (5 hours vs. 18 hours by conventional methods)
- Rapid test results (less than 5 minutes vs. more than 30 minutes by other methods)
- Cheaper testing costs (approximately 10 times cheaper than LC-MS/MS)
- No requirement for special instruments or skilled personnel in lab practice
- Reliable and accurate data

The kit is therefore a significant improvement over existing methods for on-site nitrofurans detection, and it could have a major impact on food safety and public health.