

Self Surveillance for Quality of food

Drug administration for prevention and treatment in dairy cattle causes the problem of drug residues in their tissues and milk which will have an effect on consumers and industry of yoghurt and cheese. Easy and rapid test for drug residues in milk and dairy products is necessary to be developed in order to control milk quality for the safety of consumers.

Health Impact

Prolonged consumption of milk with drug residues can cause drug resistance and allergenicity to sensitive consumers.

Target Sample

Raw milk, Pasteurized/sterilized/UHT milk, powdered milk, other dairy products

Number of Test / Set

50 Tests / Kit

Test Tools

- 50 prepared tubes
- 10 droppers

Accessory tool : water bath (Two temperature control: $64 \pm 2^\circ \text{C}$ and $82 \pm 2^\circ \text{C}$)

Collection and Preparation of Milk Sample

Raw Milk will be sampled from truck or milk container and immediately tested. If it is not possible to do so, the samples must be frozen and the test should be conducted within 7 days. Before performing the analysis, the samples must be heated in water bath at $82 \pm 2^\circ \text{C}$ for 2 minutes to destroy heat-labile natural inhibitors and microorganisms contaminated in raw milk.

- **Pasteurized Milk or liquid daily products** can be analyzed without heat treatment at $82 \pm 2^\circ \text{C}$. If analysis cannot be conducted immediately, the samples should be frozen for not exceeding 7 days.
- **Powdered Milk and Dairy Products** will be dissolved in sterile distilled water or phosphate buffer pH 6.0 with the proportion of 1:3 (weight per volume) before the test.

Test Procedure

There are 3 levels of the test according to user's purpose:

A. Test for presence or absence of drug residues

1. Add 3 drops (~0.1 mL) of milk sample into the prepared tube.



2. Add 3 drops (~0.1 mL) of UHT fresh milk into another prepared tube for negative control.
3. Incubate all the tubes for 2 hours 45 minutes in water bath when the temperature reaches $64 \pm 2^\circ \text{C}$, Keeping medium in the tube under water level, or incubate until the color of medium in negative control tube changes completely from purple to yellow. Observe the color change of medium in sample tubes.

B. Confirmatory test for Penicillin group

Add 0.05 mL of penicillinase enzyme into 2-3 mL of positive milk sample and mix together. Then, add 3 drops of mixture into another prepared tube and follow step A.2 and 3.



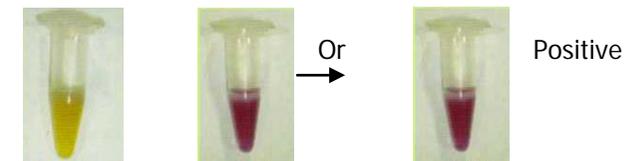
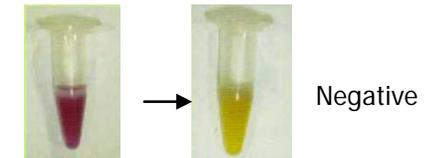
C. Quantitative test for drug residues of Penicillin group

The quantity of Penicillin residues is indicated by the level of purple color in medium which can be read in the range of 1-2, 2-4, 4-8, 8-16,128-256 $\mu\text{g/L}$ (ppb) by comparing it with standard chart.

Reading and Interpretation

Observe the color change of medium in each tested tube and interpret as follows:

A. Test for presence or absence of drug residues



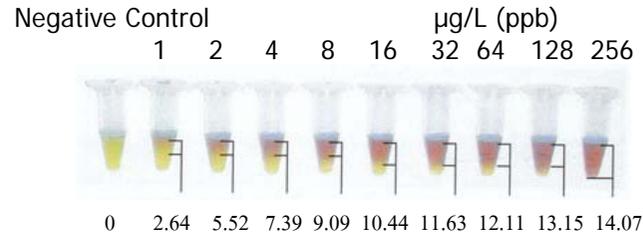
The level of purple color in medium indicates the quantity of drug residues.

Manual of Test Kit for Determination of Drug Residues in Milk and Milk Products



B. Quantitative test for Penicillin group

Standard Chart of Penicillin residues in milk



Level of purple color (mm)

For a Penicillin positive sample, if the level of purple color in medium is measured 3.2 mm., it can be concluded that there is 1-2 µg/L of Penicillin residues.

Effectiveness of Test Kit

This test kit has 91.7% accuracy, 100% sensitivity and 90.5% specificity. It can be tested for at least 12 kinds of drug residues: ampicillin, amoxicillin, bacitracin, chlortetracycline, erythromycin, kanamycin, oxytetracycline, penicillin, rifampicin, sulfadimethoxine, tetracycline and tylosin.

Storage / Expiration

Storage prepared tubes at 4-8°C for 12 month

Procedure after Test

Soak the tested medium in disinfectant by adding it into the tube and leave it there for 30 minutes or immerse the tube in boiling water for 15 minutes, and later discard it.

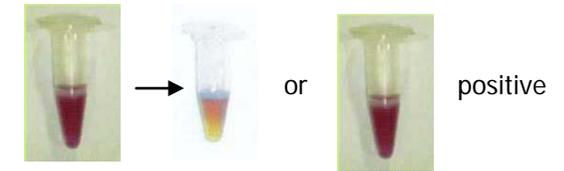
Place to Order

G9 Co., Ltd

E-Mail: foodtest@asianmedic.com
www.asianmedic.com

C. Confirmatory test for Penicillin group

The results of milk sample before adding penicillinase



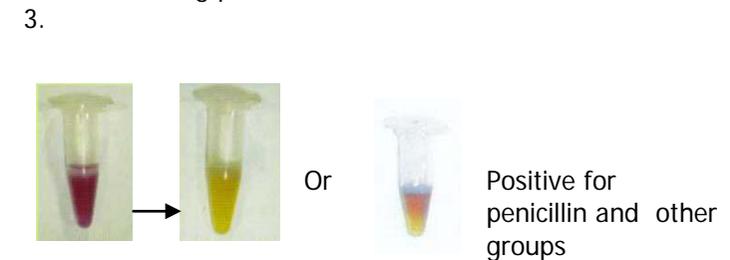
- The results of milk sample after adding penicillinase:



The color of medium changes completely from purple to yellow.



The level of purple color in medium is the same as before adding penicillinase.



The level of purple color in medium is lower than before adding penicillinase.