

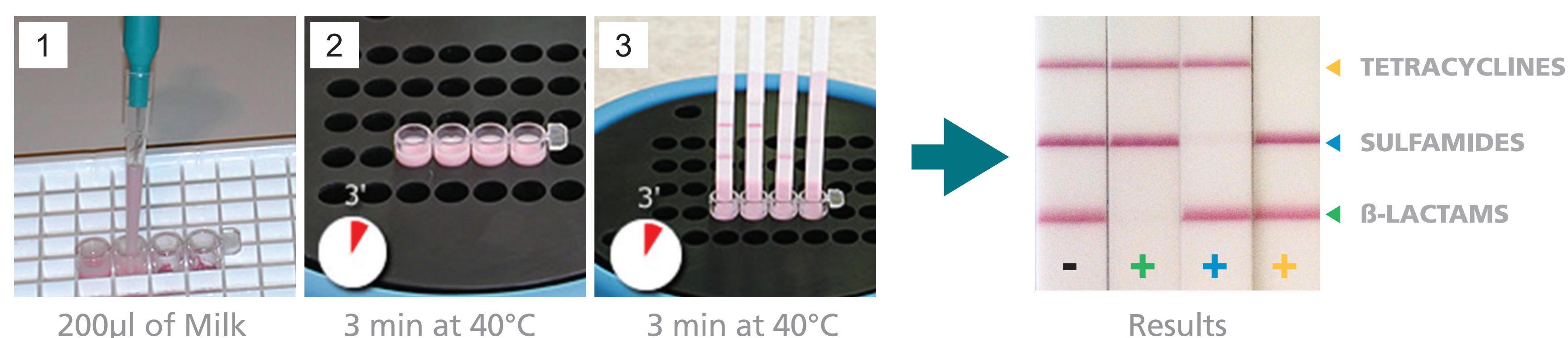
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## ABSTRACT

$\beta$ -lactams, Sulfamides and Tetracyclines are the 3 main families of antibiotics widely used by farmers to control or prevent animal bacterial diseases. Due to their human harmfulness and in respect to EU regulations, efficient controls of these antibiotics residues in food and especially in milk are needed. We have therefore developed the first rapid and easy screening test able to detect the main compounds of these 3 families of antibiotics at the same time in milk or any other matrices.

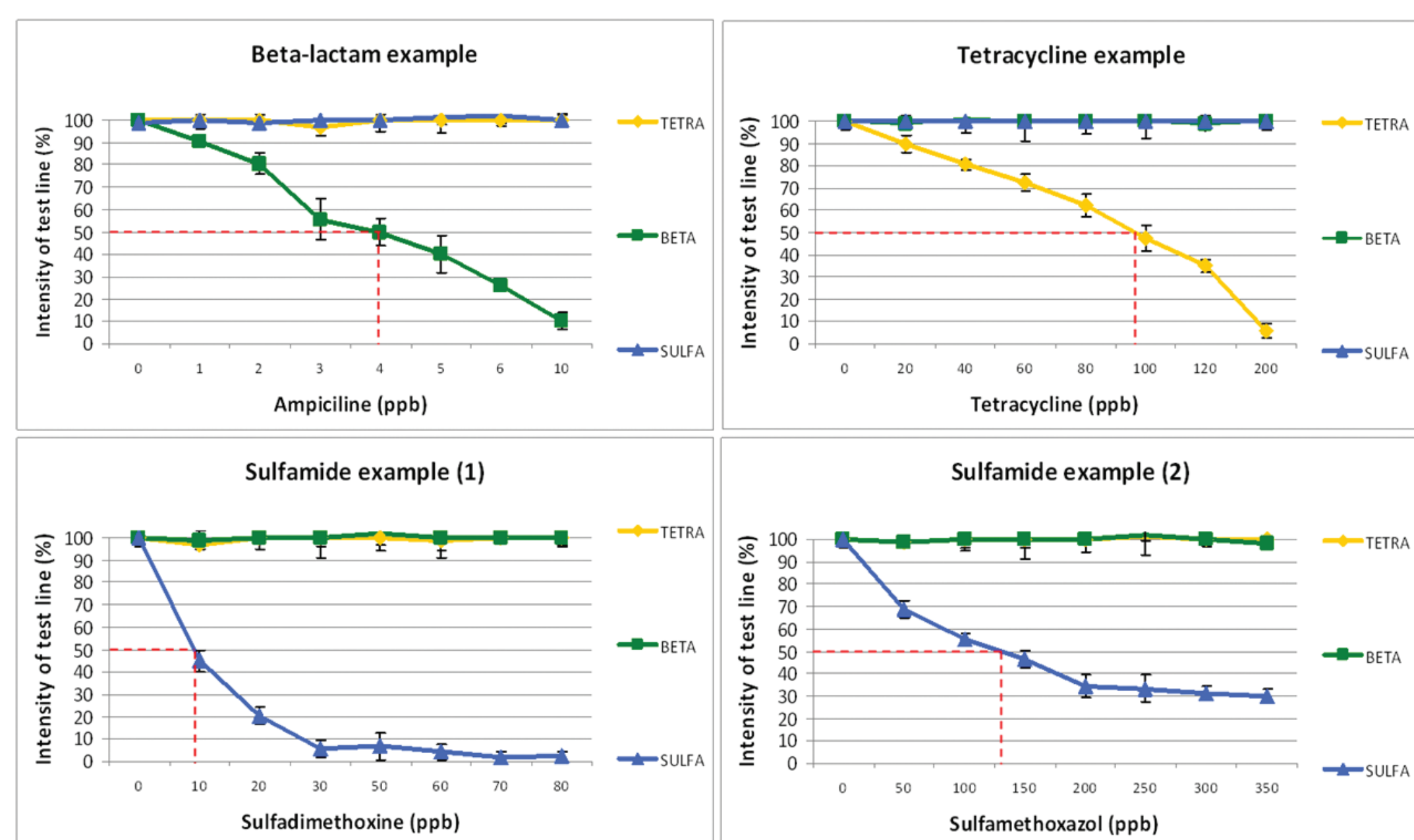
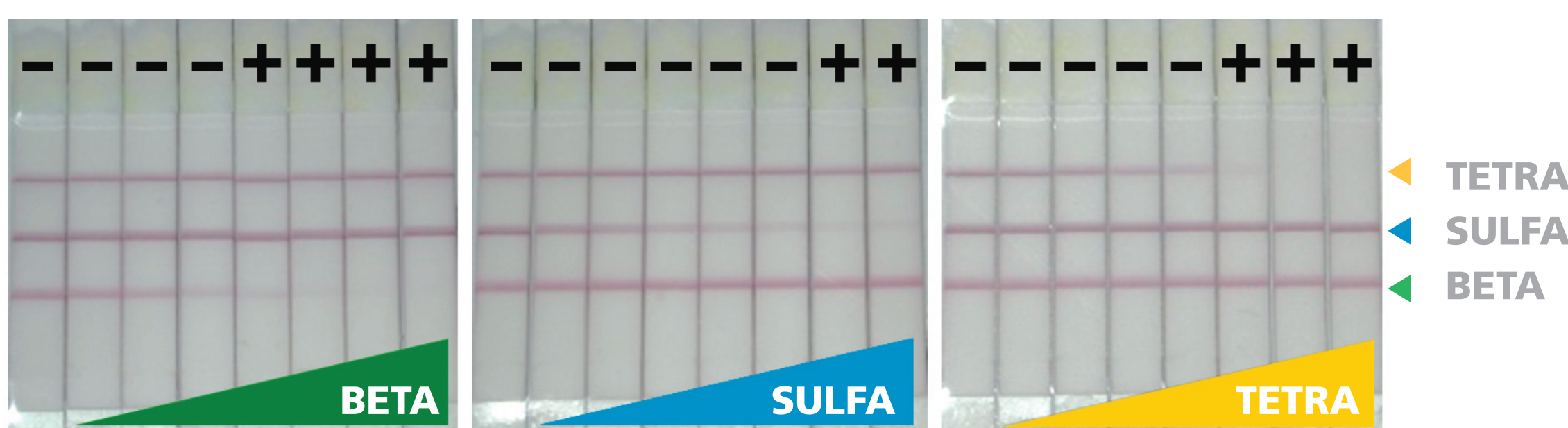
## DESCRIPTION OF THE TEST

This multiplex dipstick test is a Lateral Flow (LF) assay using specific receptors and generic monoclonal antibodies. The results are visualized at the 3 specific capture lines by the use of colloidal gold-conjugates. For the milk, it takes 6 minutes to run and does not require any cleaning or sample preparation. It is able to detect (LoD) the 3 families of antibiotics at concentrations near their respective Maximum Residue Limit (MRL) values. Accurate results can either be obtained by visual observation or with the help of optical reader.



## RESULTS

The specific test line disappears when the corresponding antibiotic concentration increases in the milk sample.



\* Dotted red lines show the IC<sub>50</sub> of each inhibition curve

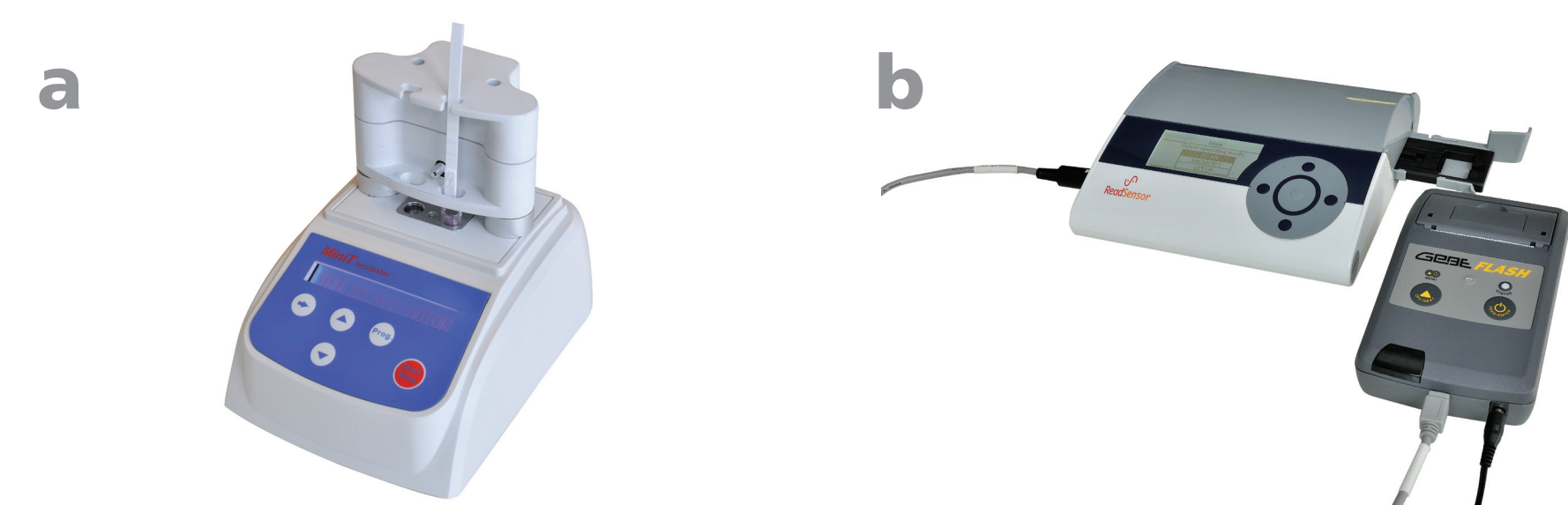
## SENSITIVITY

Limits of detection for the main antibiotics of each family.

| Trisensor Limits of Detection (ppb) |       |                        |        |                   |        |
|-------------------------------------|-------|------------------------|--------|-------------------|--------|
| B-LACTAMS                           |       | SULFAMIDES             |        | TETRACYCLINES     |        |
| <b>Penicillins</b>                  |       | Sulfadiazine           | 20-50  | Tetracycline      | 75-100 |
| Penicillin G                        | 2-3   | Sulfapyridine          | 1      | Oxytetracycline   | 56-75  |
| Ampicillin                          | 3-5   | Sulfathiazole          | 50     | Chlortetracycline | 45-55  |
| Amoxicillin                         | 3-5   | Sulfamethoxazole       | 800    | Doxycycline       | 20-40  |
| Oxacillin                           | 12-18 | Sulfamethazine         | 1-5    |                   |        |
| Cloxacillin                         | 6-8   | (= sulfadimidine)      |        |                   |        |
| Dicloxacillin                       | 6-8   | Sulfamethoxypyridazine | 5-10   |                   |        |
| Nafcillin                           | 30-40 | Sulfadimethoxine       | 50     |                   |        |
| <b>Cephalosporins</b>               |       | Sulfacetamide          | 1000   |                   |        |
| Ceftiofur                           | 10-15 | Sulfamerazine          | 1-5    |                   |        |
| Cefquinome                          | 30-35 | Sulfamonomethoxine     | 30-50  |                   |        |
| Cefazolin                           | 18-22 | Sulfaquinoxaline       | 50-100 |                   |        |
| Cephapirin                          | 6-8   | Sulfachloropyridazine  | 100    |                   |        |
| Cefacetrile                         | 30-40 |                        |        |                   |        |
| Cefoperazone                        | 3-4   |                        |        |                   |        |
| Cefalexin                           | 2000  |                        |        |                   |        |
| Cefalonium                          | 3-5   |                        |        |                   |        |

## NEW ACCESSORIES

Heatsensor combined with a dipstick dispenser (a) allows to perform automatically the analysis in 1 single step. New optical Readsensor (b) gives automatically results of the test, suppressing any subjectivity from the operator.



## CONCLUSION

In conclusion, we are thus presenting the first rapid test based on dipstick format that is able to detect simultaneously more than 30 antibiotics in one analysis.