

Multiplex immunoassay for quantification of antigens of diphtheria, tetanus and acellular pertussis in human combined DTaP vaccines

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Organisation

Name of the organisation Sciensano

Department Quality of vaccines and blood products

Country Belgium

Geographical Area Brussels Region

Partners and collaborations

VAC2VAC

SCOPE OF THE METHOD

The Method relates to	Human health
The Method is situated in	Basic Research
Type of method	In vitro - Ex vivo

DESCRIPTION

Method keywords

immunology

multiplex

antibody

Luminex

IgG

Scientific area keywords

DTaP

vaccine

immunoassay

quality control

Method description

The multiplex immunoassay is based on the Luminex technology and allows the detection of diphtheria, tetanus and acellular pertussis antigens of human combined vaccines in the same run. As potency test of these vaccines are currently performed on animal through challenge and/or serological assays, the use of such in-vitro method for the quality control of DTaP vaccines would significantly reduce the number of used animals.

Lab equipment

- Luminex Magpix;
- Luminex 200 or equivalent;
- Incubator 37°C;
- Fridge;
- Centrifuge;
- Ultrasonic bath.

Method status

Still in development

PROS, CONS & FUTURE POTENTIAL

Advantages

- Allows quantification of several antigens in one run;
- Reduce/abolish the number of animals used for the quality control of vaccines.

Challenges

Reading time (+/-45min) for one plate compared to an ELISA plate (instantaneous).

Modifications

The method was developed on adsorbed antigens and final vaccine formulation but a desorption step could be required for some vaccines.

Future & Other applications

Development was performed on vaccines from two manufacturers but could be expanded for the use on vaccines from other manufacturers.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

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