Method for the simultaneous determination of amoxicillin, ampicillin, doxycycline and metronidazole from solid samples (powders/ nanofibers/ tablets) and liquid samples (synthetic biological fluids)

Summary

Profile type	Company's country	POD reference
Technology offer	**Romania**	**TORO20240306006**
Profile status	**Type of partnership**	**Targeted countries**
PUBLISHED	**Research and development cooperation agreement** **Commercial agreement with technical assistance**	**• World**
Contact Person	**Term of validity**	**Last update**
Cristina-Maria BALGARADEAN	**9 Oct 2024** **9 Oct 2025**	**9 Oct 2024**

General Information

Short summary

A Romanian research institute has developed and validated a method for simultaneous determination of amoxicillin, ampicillin, doxycycline and metronidazole from solid samples (powders/ nanofibers/ tablets) and liquid samples (synthetic biological fluids), which has application in pharmacy and medicine. The Romanian Research Institute is looking for partners to implement and further develop the method through a research cooperation agreement or a commercial agreement with technical assistance.

Full description

Antibiotics used in human and animal therapy have been one of the leading scientific achievements of the last century that revolutionized the treatment of infectious diseases worldwide. These substances are known to kill or constrain the growth of microorganisms at very low concentrations. Therefore, quantifying the antibiotics in pharmaceutical formulations is crucial for quality control assurance. HPLC is a valuable tool in quantifying antibiotics in various samples due to its simplicity, speed, low cost, and applicability to various analyte types. Moreover, HPLC is renowned for its robust separation technique and high selectivity.

Quantitative determination plays a crucial role in the pharmaceutical industry and medicine due to the direct effect of active pharmaceutical ingredients on human health. Therefore, the high extraction efficiency of amoxicillin, ampicillin,

doxycycline and metronidazole from pharmaceutical formulations to extraction solutions is also a key factor. Moreover, a precise and accurate analytical method permits quantitative determination at trace levels without interference. The developed method allows the simultaneous determination of amoxicillin, ampicillin, doxycycline and metronidazole from solid samples (powders/ nanofibers/ tablets) and liquid samples (synthetic biological fluids) and consists of the following steps: removal of excipients using an extraction step, followed by HPLC-DAD analysis.

The proposed HPLC-DAD method requires no sophisticated software and is applicable for the quality control and routine analysis of the studied antibiotics. Current and potential domain of application: simultaneous determination of amoxicillin, ampicillin, doxycycline and metronidazole from various solid and liquid samples for the quality control of products/materials and risk assessment purposes.

Aiming to transfer research results to the market, as well as further develop the method, the Romanian research institute seeks new international business partners interested in implementing the method in their activity to optimise processes/product development or joining a research and development consortium to further develop the method. Potential partners include research institutes, universities and/or SMEs in the medical, pharmaceutical, chemical industries.

Cooperation will be based on research cooperation agreements or a commercial agreements with technical assistance.

Advantages and innovations

Innovative character:
- use of high-performance liquid chromatography coupled with diode array detection (HPLC-DAD) method for the simultaneous determination of amoxicillin, ampicillin, doxycycline and metronidazole from solid samples (powders/ nanofibers/ tablets) and liquid samples (synthetic biological fluids) with reliable accuracy, linearity, precision, and reproducibility; - the validated method can easily and conveniently be implemented for the routine quality control analysis of amoxicillin, ampicillin, doxycycline and metronidazole in pharmaceutical forms and water samples.

Advantages:
- method is applicable to small sample volumes;
- simple sample preparation protocol and identical chromatographic conditions, namely stationary and mobile phases, applied for all the investigated compounds;

Technical specification or expertise sought

Stage of development

Under development

Sustainable Development goals

- **Goal 17: Partnerships to achieve the Goal**

IPR Status

IPR applied but not yet granted

IPR Notes

IPR Notes

Partner Sought

Expected role of the partner

The Romanian Research Institute seeks international business partners under research cooperation agreements or cooperation agreements with technical assistance.

Potential partners include research institutes, universities and/or SMEs in the medical, pharmaceutical, chemical industries.

For research cooperation agreements: Potential partners will collaborate with the Romanian Research Institute to further develop the method for the determination of amoxicillin, ampicillin, doxycycline and metronidazole from solid samples (powders/ nanofibers/ tablets) and liquid samples (synthetic biological fluids) using appropriate equipment and qualified personnel. Interested parties should also be available for developing joint research grant proposal seeking the advancement of the proposed technology.

For commercial agreement with technical assistance: Potential partners will implement the method for the determination of amoxicillin, ampicillin, doxycycline and metronidazole from solid samples (powders/ nanofibers/ tablets) and liquid samples (synthetic biological fluids) within their business processes, so that it becomes part of their business offering. Interested partners should hold appropriate equipment and qualified personnel. The Romanian research institute will support its partners with technical assistance.

Type of partnership

Research and development cooperation agreement

Commercial agreement with technical assistance

Type and size of the partner

- **R&D Institution**
- **University**

Dissemination

Technology keywords

- **06001012 - Medical Research**

Market keywords

- **05007007 - Other medical/health related (not elsewhere classified)**

Targeted countries

- **World**

Sector groups involved

- **Health**