

Method for the simultaneous determination of vitamins D3 (calcitriol, cholecalciferol) and K2 (menaquinone-4 and menaquinone-7) in dietary supplements

Summary

Profile type

Technology offer

Company's country

Romania

POD reference

TORO20240315003

Profile status

PUBLISHED

Type of partnership

Research and development cooperation agreement
Commercial agreement with technical assistance

Targeted countries

• World

Contact Person

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Term of validity

9 Oct 2024
9 Oct 2025

Last update

9 Oct 2024

General Information

Short summary

A Romanian research institute has developed and validated a method for the simultaneous determination of vitamins D3 (calcitriol, cholecalciferol) and K2 (menaquinone-4 and menaquinone-7) in dietary supplements with applications in the routine quality control of laboratories in the pharmaceutical industry. 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

Worldwide, vitamins and minerals are the most widespread dietary supplements used by individuals. The determination of vitamins D3 and K2 in dietary supplements is required and urgently needed, but no official, validated method exists for the simultaneous measurement of vitamins D3 and K2. When dealing with complex matrices, a comprehensive sample preparation is necessary to eliminate interferences in the HPLC method from other compounds with chemical formulas and structures. Moreover, instead of good sensitivity of the currently used techniques, their cost and complexity are challenging for the routine quality control of laboratories in the pharmaceutical industry.

The method developed allows the simultaneous determination of vitamins D3 (calcitriol, cholecalciferol) and K2

(menaquinone-4 and menaquinone-7) in pharmaceutical formulations. The Romanian research institute has validated the method according to European Pharmacopoeia guidelines. The method consists of extracting the targeted analytes with a polar solvent, followed by their determination using UHPLC-DAD. The validated UHPLC method displayed favourable linearity, good recoveries, intra-day and inter-day precisions, high selectivity and specificity, and low LODs and LOQs for all the target nutritional compounds (D3 and K2 vitamins).

The method proposed is important for the quality control of analytical laboratories dealing with the determination of vitamin vitamins D3 (calcitriol, cholecalciferol) and K2 (menaquinone-4 and menaquinone-7) in dietary supplements by UHPLC, since it presents a simultaneous and fully-validated method for this purpose.

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 new method into their processes for:

- precisely assessing the content and composition of dietary supplements;
- accurately determine vitamin contents to improve dietary supplements quality and nutritional value;

Potential partners include universities and research institutes in the areas of chemistry, medicine, pharmacy, producers of dietary supplements, as well as laboratories focused on different chemical analyses.

Cooperation with potential partners will be based on research cooperation agreement or a commercial agreement with technical assistance.

Advantages and innovations

Innovative character:

- application of ultra-high-pressure liquid chromatographic (UHPLC) method for the simultaneous determination of vitamins D3 (calcitriol, cholecalciferol) and K2 (menaquinone-4 and menaquinone-7) in pharmaceutical formulations;
- all target analytes needed only one injection and could be separated and fast measured (<35 min)

Advantages:

The validated UHPLC method displayed favourable linearity, good recoveries, intra-day and inter-day precisions, high selectivity, specificity, and low limit of detection (LoD<0.01 µg/mL) for all the target nutritional compounds

Technical specification or expertise sought

Stage of development

Under development

IPR Status

IPR applied but not yet granted

Sustainable Development goals

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

IPR Notes

Partner Sought

Expected role of the partner

The Romanian research institute seeks new international business partners interested in long-term cooperation for the scientific advancement or business implementation of the proposed method for the simultaneous determination of vitamins D3 (calcitriol, cholecalciferol) and K2 (menaquinone-4 and menaquinone-7) in dietary supplements. Cooperation with potential partners will be based on research cooperation agreement or a commercial agreement with technical assistance.

Partners sought include:

For research and cooperation agreements: universities and research institutes in the areas of chemistry, medicine, pharmacy interested in utilizing the method in their research or wishing to join research projects and consortia aimed at advancing the method proposed and its applications.

For commercial agreement with technical assistance: universities in the medical/pharmaceutical areas and chemical laboratories interested in implementing the method in their commercial activity. 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**

Targeted countries

• **World**

Market keywords

• **07003002 - Health food**

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

Sector groups involved

• **Health**