

Unravelling of the degradation pathway of a bimetallic anticancer complex in human plasma

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Gold statement

- Titanocref is an anticancer active bimetallic complex
- Little is known about its stability in plasma
- A hyphenated analytical technique was employed to gain unique insight into its degradation in plasma

Introduction

The infusion of more metal-complexes into the drug discovery pipeline requires the execution of studies which demonstrate that the metal-complex of interest has a reasonable chance of reaching the cancer tissue intact. The complexity of plasma requires the utilization of an appropriate analytical technique to gain insight into this pharmacologically important information.

Body

We have employed a hyphenated approach based on size-exclusion chromatography (SEC) coupled on-line to an inductively coupled plasma atomic emission spectrometer (ICP-AES) to probe the stability of Titanocref - a gold and titanium containing bimetallic complex - in plasma from a healthy adult. Simultaneous monitoring of the emission lines of gold, titanium and sulfur in the SEC column effluent allowed to establish a feasible degradation pathway.

Conclusion

One hour after the addition of a pharmacologically relevant Titanocref dose to plasma 30% had degraded, while 70% appeared to remain intact. These results demonstrate that SEC-ICP-AES can provide important insight into the stability of bimetallic metal-complexes in plasma, which is an important prerequisite to accelerate these into pre-clinical studies.

References

- [1] J. Chromatogr. B 1145, 2020, 122093