Lutfi Aditya Hasnowo (Indonesia)
National Research Tomsk Polytechnic University
Scientific advisor: Yusubov M. S., Professor

RADIOIODINATION OF SMALL MOLECULE PSMA LIGAND

Abstract

The ^{123}I, which have unique characteristics, are attracting attention in taking up their role in the development and practical use of PSMA targeting radiopharmaceuticals. Due to its features of rapid extravasation, rapid diffusion in the extravascular space, and effective blood clearance, PSMA inhibition is currently dominating imaging development for prostate cancer. The development of small molecule peptides based on urea ^{123}I continues to progress with the challenge of obtaining optimal performance as a PSMA targeting radiopharmaceutical for prostate cancer. Radiolabeling ^{123}I to the target peptide is an important step because it can affect the quality of its resistance as a radiopharmaceutical. Therefore, it is necessary to optimize the labeling of iodine to target peptides

Introduction

Prostate cancer is the sixth leading causes of cancer death in men worldwide in 2021 [1]. In fact, approximately 450,000 men in Europe have been diagnosed with prostate cancer in 2018 [2]. Investigation and application of PSMA-TRT for prostate cancer diagnosis and endo-radiotherapy have seen great success in Nuclear Medicine [3]. ^{123}I provides a much lower radiation dose to the patient, its 159 keV gamma-ray energy is ideal for use in single-photon emission computerized tomography (SPECT) diagnostic. The gamma rays will penetrate tissues very effectively without excessive radiation doses [4]. Radiolabeling ^{123}I to the target peptide is an important step because it can affect the quality of its resistance as a radiopharmaceutical. Here will be optimization of iodine labeling to target peptides

Method

Optimization of ^{123}I labeling to target peptides was carried out by varying several labeling parameters, including variations in labeling reaction times, variations in the amount of peptides used in labeling, and variations in oxidizing agents in the labeling process. The optimal condition of each parameter will be used for final labeling.

Conclusion

Radiolabeling ^{123}I on the target peptide is an important step because it can affect the quality of its resistance as a radiopharmaceutical. Therefore, it is necessary to optimize iodine labeling to target the peptides. The labeling optimization process needs to be carried out by varying several labeling parameters

so as to obtain optimal labeling conditions and produce optimally radioidinated ligand peptides.

REFERENCES

1. R. L. Siegel, K. D. Miller, H. E. Fuchs, and A. Jemal, Cancer statistics, 2021 // CA: A Cancer Journal for Clinicians. - 2021, vol. 71, No. 1, pp. 7–33.
2. E. A. M. Ruigrok, W. M. Van Weerden, J. Nonnekens, and M. De Jong, The future of PSMA-targeted radionuclide therapy: An overview of recent preclinical research // In Pharmaceutics. – 2019, vol. 11, No. 11, pp. 560
3. J. Czernin and J. Calais, (177) Lu-PSMA617 and the vision trial: One of the greatest success stories in the history of nuclear medicine // Journal of Nuclear Medicine. - 2021, vo. 62, No. 8, pp. 1025–1026.
4. International Atomic Energy Agency (2019) Cyclotron produced radionuclides: Physical characteristics and production methods. TRS-468. 468:279

Nahar Priyanka (India)

Tomsk Polytechnic University, Tomsk

Scientific adviser: Loyko Olga Timofeevna, Professor

THE HISTORY OF ARTIFICIAL INTELLIGENCE AS A SUBJECT OF TECHNICAL SCIENCE

Introduction

Artificial intelligence (AI) has become one of the most exciting and rapidly evolving areas of technical science today. With the potential to revolutionize many aspects of society, from healthcare to transportation, AI has captured the imagination of researchers, policymakers, and the general public alike. The concept of AI has been around since the mid-20th century, and it has been the subject of numerous studies and research projects ever since.

Keywords

Artificial intelligence, technical science, machine learning, deep learning.

The Birth of AI

The term "Artificial Intelligence" was first coined by John McCarthy, Marvin Minsky, Nathaniel Rochester, and Claude Shannon in 1956 during the Dartmouth Conference, which is widely regarded as the birthplace of AI as a