

## OPONENT'S REPORT OF BACHELOR THESIS

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Title: Synthesis and separation of novel bombesin analogues for targeting molecular radionuclide imaging and therapy in oncology.

The issue of appropriate conditions selections for radiodiagnostical and radiotherapeutical preparations synthesis are currently up to date, especially in terms of development of a new generation of these products. The submitted work has set as its aim to optimize the preparation of radiolabeled bombesin peptide using bifunctional chelating agents.

The introduction of this thesis gives a brief and clear overview of radiopharmaceuticals based on peptide carriers, particularly bombesins, in terms of their use in diagnosis and therapy of tumors.

In the experimental part dealing with the preparation of BFC-peptide conjugates the author focused on peptide [ $^{125}\text{I}$ ]Bombesin labeling by three different commercially available derivatives of chelating agents (DOTA, NOTA, PCTA) with isothiocyanatobenzyl group. The results are presented clearly and properly commented. Nevertheless I have a suggestion to chromatograms. The identification of individual components of the reaction mixture, i.e. conjugate, free chelate or bombesin, is not properly marked.

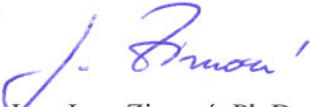
In the conclusions author summarizes the results of her work. She managed to determine the appropriate procedure for the preparation of stabile conjugates and their purification using HPLC method.

There are no fundamental shortcomings in the thesis. I only have a few other minor comments and questions:

1. The author uses the term "rhodanid group" for the chelating agents reactionary group. This term is used rather for the thiocyanato ( $-\text{SCN}$ ) group but the agents reactionary group is isothiocyanato ( $-\text{NCS}$ ).
2. Was pH of the reaction mixture buffered with ammonium acetate measured? In the case when the TRIS buffer was used, pH of the reaction mixture was additionally adjusted to pH 8.5. Why the reaction mixture with ammonium acetate was not adjusted to this value to make the results more comparable as well?
3. In the text of the Conclusions are given results of conjugates labeling with radionuclide  $^{177}\text{Lu}$ . However, these results are from other authors. It would be better to present these dates rather in an addendum, not as a part of the author's work conclusions discussion.

Assessed bachelor thesis is a quality scientific elaboration of the current research theme. I read up this thesis and I recommend it to the defense. I classify this bachelor thesis as excellent.

Prague, 12th June 2012

  
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