

## Accepted Manuscript

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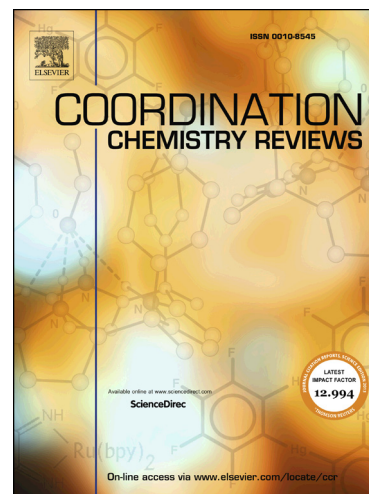
PII: S0010-8545(17)30136-4  
DOI: <http://dx.doi.org/10.1016/j.ccr.2017.05.001>  
Reference: CCR 112449

To appear in: *Coordination Chemistry Reviews*

Received Date: 24 March 2017  
Revised Date: 1 May 2017  
Accepted Date: 5 May 2017

Please cite this article as: R. Jastrzab, M.T. Kaczmarek, M. Nowak, A. Trojanowska, M. Zabiszak, Complexes of polyamines and their derivatives as living system active compounds, *Coordination Chemistry Reviews* (2017), doi: <http://dx.doi.org/10.1016/j.ccr.2017.05.001>

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## Complexes of polyamines and their derivatives as living system active compounds

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Acknowledgements

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### Abstract

This review will summarize the role of polyamines, their synthesis, metabolism and function in living systems. Moreover, the ability of polyamines and their analogues to form complexes with transition and lanthanide metal ions is described. Properties of polyamine complexes depend on the number of amine groups and the length of methylene chains in the molecules. Polyamines are successfully used to obtain macrocyclic and acyclic Schiff base compounds in the template condensation reaction. The preparation method for macrocycling Schiff base complexes uses metal ion as a promoting factor. This method has also been used to synthesize salen-type Schiff base complexes. The interesting structures and properties of polyamines complexes and Schiff base complexes are caused by donor nitrogen atoms of polyamines, which besides forming coordination bonds could also be involved in the creation of a system of hydrogen bonds. Importantly, polyamines complexes are widely used in medicine as anticancer drugs and an antibacterial compounds.

*Keywords:* Polyamines; Complexes of polyamines; Schiff-base complexes; Complexes in medicine

### 1. Introduction

Polyamines (PAs) are relatively simple aliphatic substances which consist of two or more primary amino groups (-NH<sub>2</sub>). There are more than 20 types of polyamines present in the human body. Their role in the life processes of animals and plants is essential [1–5]. The principal amines in living systems, known as biogenic, include: Putrescine (Put), Spermidine (Spd), Spermine (Spm), Fig. 1.

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