

COMPUTER SCIENCE, TECHNOLOGY AND APPLICATIONS

Computer Vision and Simulation

Methods, Applications
and Technology

Sherri Alexander
Editor



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**COMPUTER VISION
AND SIMULATION**

**METHODS, APPLICATIONS
AND TECHNOLOGY**

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**SHERRI ALEXANDER
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Chapter 4

**INFLUENCE OF YTTRIUM(III) ION
ON CALCIUM(II) AND ZINC(II)
BIOSPECIATION IN HUMAN BLOOD PLASMA
BY COMPUTER SIMULATION**

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ABSTRACT

The effect of yttrium(III) ion on calcium(II) and zinc(II) speciation in human blood plasma was studied by computer simulation using the program Hyss2009. Calcium-hydrogen carbonate $[\text{CaHCO}_3]^+$ and ternary zinc-cysteinate-citrate $[\text{ZnCysCit}]^{-3}$ complexes are predominant species of Ca(II) and Zn(II) ions in normal human blood plasma. Exogenously introduced yttrium(III) ion can compete with Ca(II) and Zn(II) ions for low molecular mass (LMM) ligands in blood plasma, thus influencing

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