

X – ray examination of the serum coming from patients with selected types of cancer

H. Drozdowski^{1,2*}, K. Domin,^{1,2}
M. Śliwińska-Bartkowiak^{1,2} and Z. Błaszczak¹

¹Adam Mickiewicz University, Umultowska 85,
61-614 Poznań, Poland

²NanoBioMedical Centre, Adam Mickiewicz
University, Umultowska 85, 61-614 Poznań, Poland

Keywords: X-ray diffraction method; X-ray marker Ω_{rig}

*e-mail: riemann@amu.edu.pl

We report the results of the investigations of the blood serum samples which were collected from the patients who suffered from neoplastic diseases by the X-ray diffraction method. Blood serum consists in majority of water and also of a low concentration of proteins and ions which are dissolved in water.

Diffraction images obtained for different preparations were compared with the image of diffraction for distilled water. Diffraction images for the distilled water differ from the ones obtained for the test preparations. The difference is the in disappearance of a collateral maximum which indicate the disturbance in the water tetrahedral structure forming part of the serum. The numerical method of Newton's allowed tangents to determined Ω_{rig} coefficients for the examined preparations. Compared values of the coefficients Ω_{rig} of the test serum with the Ω_{rig} of the distilled water show that the smaller the coefficient Ω_{rig} the greater the severity of cancer.

The experimental part presents functions of angular distributions of X-ray intensities scattered in the examined preparations, which was distilled water,

multielektrolyte fluid and blood serum of patients suffering from ovarian tumors and pelvic tumors.

Numerical method tangens Newton helped to determine the coefficients for the test formulations (Fig. 1).

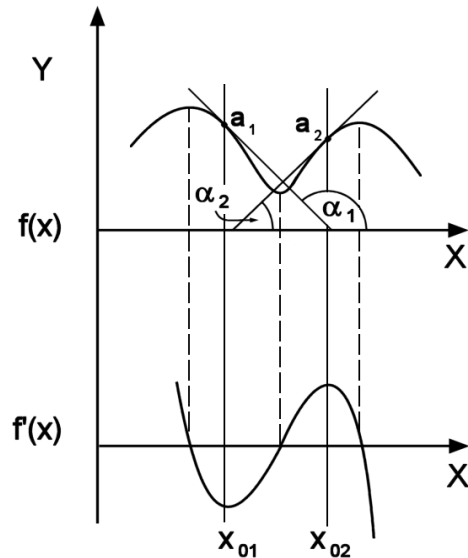


Figure 1. The function and the derivative of the intensity distribution corresponding to distilled water.

Compared coefficients test serum with distilled water shows that the smaller the value of the higher the degree of advancement of cancer [1,2].

-
- [1] H. Drozdowski, Z. Błaszczak, *X-ray diffraction studies of blood serum*, (Innovative Technologies in Biomedicine, Conference Materials p. 44, 2013 Kraków).
- [2] Z. Błaszczak, H. Drozdowski, *X-Ray study of blood plasma from patients with neoplastic disease*, (International Soft Mater Conference, Conference Materials p. 235, 2010, Granada, Spain).