SAMPLE PREPARATION FOR TOTAL-REFLECTION X-RAY FLUORESCENCE ANALYSIS OF BLOOD SAMPLE

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We studied the sample preparation for total-reflection X-ray fluorescence (TXRF) analysis of the whole blood sample of human body. Although the TXRF analysis of the blood sample has been reported[1], a simple and rapid preparation procedure for TXRF analysis of the blood sample is required. After the whole blood was diluted 8 times by Milii-Q water[2], it was dropped onto a glass substrate. By adding the water to the blood, the red blood cells were destroyed due to “hemolysis” phenomenon; therefore, the flat dried residue was obtained, leading to the improvement of limits of detection limits. Since any separation processes were not necessary, TXRF analysis could be rapidly performed. A commercially available TXRF instrument (Nanohunter, Rigaku. Co.) was used for TXRF analysis. The quantitative data of Ca, Fe, Cu and Zn in whole blood were obtained by addition of internal standard (V) and were compared by the data obtained by ICP-AES. Both data showed a good agreement. It would be merit of TXRF over ICP-AES that Br and Cl could be determined without any problems. Finally, the whole blood of the rat, which drank the polluted water with As, was measured by TXRF, after the same sample preparation.

References

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