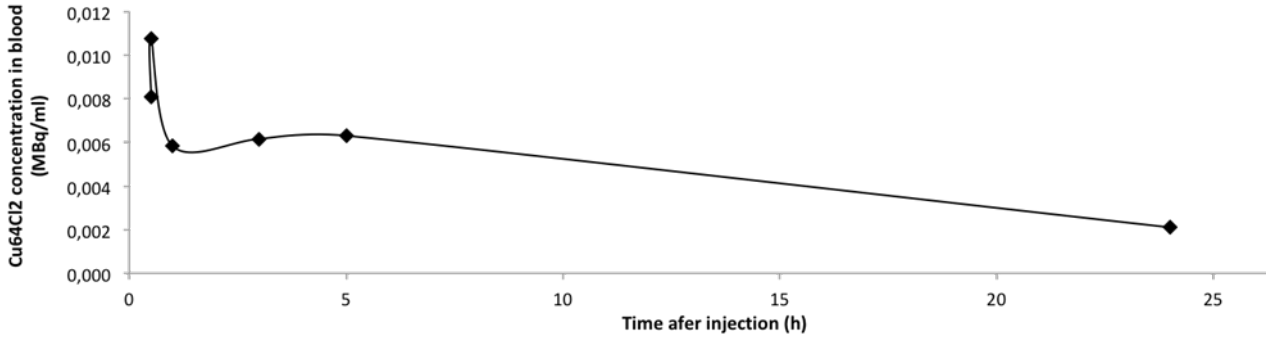
Evaluation of kinetics

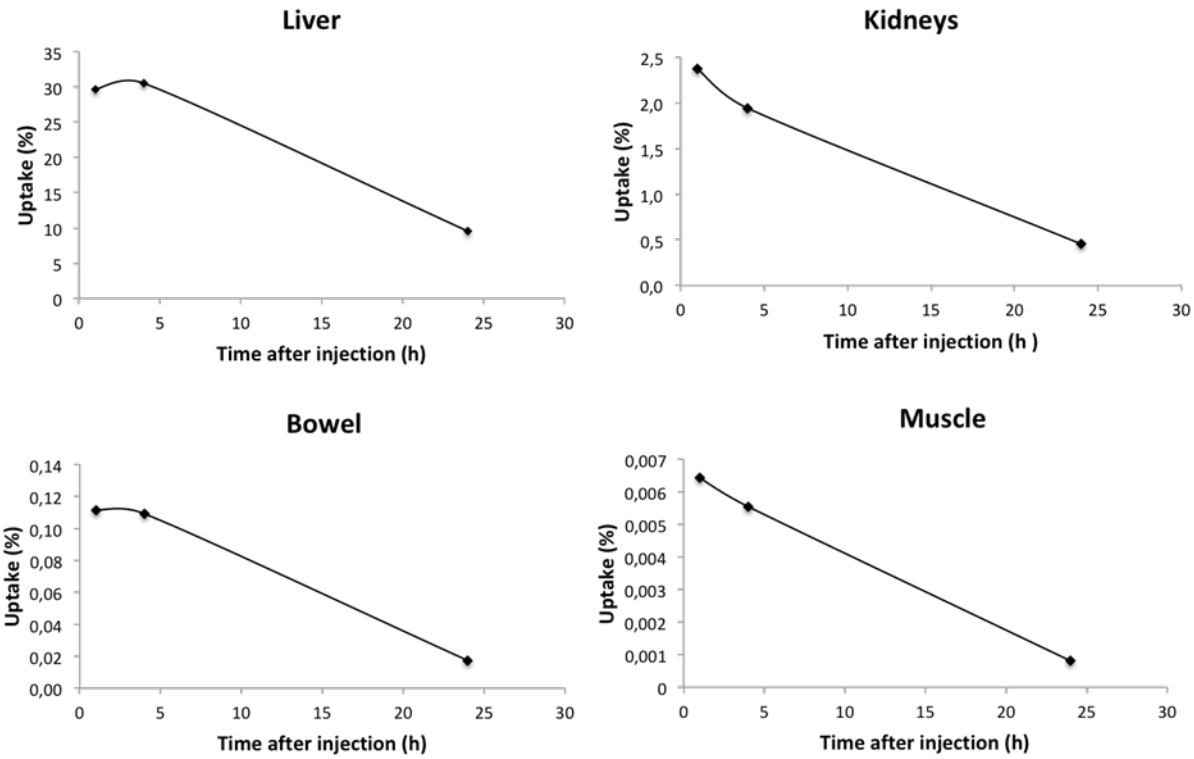
The results on the kinetics of the IMP obtained in the present study confirm the data of the literature, ie a type of biphasic kinetics of the transport of copper in the blood (Linder MC, 1998).
In the first phase, almost the total administered activity rapidly leaves the circle to concentrate mainly in the liver while the renal concentration is very low. Only in a very small measure copper is initially captured by the "peripheral" organs.
After few hours, the activity re-emerges progressively in the plasma ("second phase"), and begins to concentrate also in the other organs and tissues (for example in the intestine).
Instead in the target (tumor lesions from prostate carcinoma) the concentration of 64Cu(II)Cl2 is concentrated early in the first hours (from 1 hour to 4 hours) and then decreases over time.
The results relative to the kinetics of 64Cu(II)Cl2 in the blood (A), in the main tissues (B), and in an example of lesion (C) are shown in the graphs below.

For example, the results of the Kinetics 64Cu (II) Cl2 in the Blood (a), in the main tissues (B) and in the lesion (C) are reported in the following graphs for a single patient. In particular, data derived from blood samples prescribed by the Protocol were used to define the blood concentration of 64Cu(II)Cl2 in MBq/ml, while to assess the percentage of 64Cu (II) Cl2 absorption by the organs at risk and by the lesions data were obtained by the three PET scans (1h, 3h, 5h).
The graphs show that, with the exclusion of the liver, in the other organs at risk the maximum absorption percentage is less than 3% of the total activity of 64Cu (II) Cl2 injected into the patient.

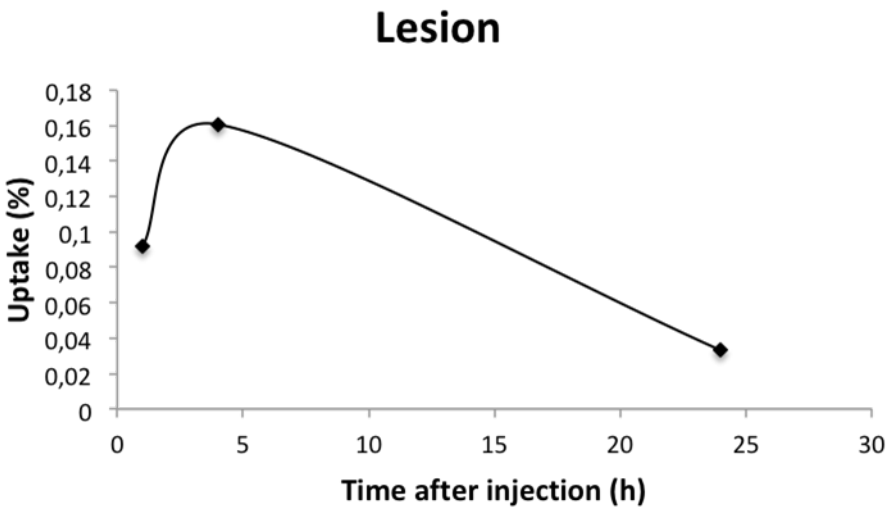
A. Typical time-activity curve of 64Cu(II)Cl2 activity concentration in blood



B. Typical time-activity curves of 64Cu(II)Cl2 (as percentage of SUV) for source organs



C. Typical time-activity curves of 64Cu(II)Cl2 for lesion



The doses absorbed by the organs per unit of activity administered and effective dose per unit of activity administered calculated according to the ICRP methodology 103 are illustrated in the following table.

Table 1: Doses absorbed by the organs per unit of activity administered and effective dose per unit of activity administered calculated according to the ICRP methodology 103.

Absorbed dose for unit of administered activity (mGy/MBq)	**Mean**	**±**	**standard deviation**
Adrenals	**4.40E-02**	**±**	**9.90E-03**
Brain	**1.50E-02**	±	3.30E-03
Breasts	**2.00E-02**	±	1.40E-03
Gallbladder Wall	**7.20E-02**	±	2.30E-02
LLI Wall	**2.20E-02**	±	2.80E-03
Small Intestine	**1.90E-01**	±	1.20E-01
Stomach Wall	**2.80E-02**	±	3.30E-03
ULI Wall	**4.00E-02**	±	1.10E-02
Heart Wall	**3.20E-02**	±	3.80E-03
Kidneys	**9.40E-02**	±	2.10E-02
Liver	**6.40E-01**	±	2.80E-01
Lungs	**7.30E-02**	±	4.10E-02
Muscle	**1.30E-02**	±	3.70E-03
Pancreas	**4.10E-02**	±	8.20E-03
Red Marrow	**2.20E-02**	±	2.20E-03
Osteogenic Cells	**3.50E-02**	±	4.50E-03
Skin	**1.60E-02**	±	1.50E-03
Spleen	**2.20E-02**	±	1.70E-03
Testes	**1.50E-02**	±	2.80E-03
Thymus	**2.00E-02**	±	1.60E-03
Thyroid	**1.60E-02**	±	2.70E-03
Urinary Bladder Wall	**1.90E-02**	±	2.30E-03
Effective dose ICRP 103 (mSv/MBq)	**6.00E-02**	±	1.60E-02