Reviewer’s report

Title: Tuning of liver mitochondrial plasticity during brain tumor development

Version: 1 Date: 16 May 2006

Reviewer: Margherita Greco

Reviewer’s report:

General
This study presents evidence for a role for a distant tumor in inducing a loss of water structural order in liver mitochondria. The authors show that this loss is associated with an increase in cholesterol content, changes in mitochondrial ion concentration and enhanced caspase activity, index of increased apoptosis. They also argue that an increase in liver mitochondrial biogenesis takes place.

This is an interesting study that with additional data, language revision and text editing would be suitable for publication in BMC Cancer.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. It is not clear when the animals have been sacrificed. This has to be clearly indicated and discussed to understand whether the effects described take place at the beginning, middle or at the end (late) phase of brain tumor development. Indeed, as it seems that only one time point has been considered in this study, the title of the paper should be changed into something more responding to the data set, such as Changes in liver mitochondrial plasticity induced by brain tumor, unless data sets for at least two phases of tumor development (early and late phase), can be provided.
2. There is no indication on the number of animals that have been included in this study. This is important for the significance of the study itself.
3. Statistical analysis and/or the statistical approach are missing in some experiments (Table 1, Fig. 1, Fig. 4), and have to be included.
4. Authors should state whether data are expressed as mean ± STD or ± SE.
5. A brief discussion should be provided on the finding that Cu2+ content increases in liver mitochondria of tumor-bearing rats.
6. In Figs. 2, 3, 4, column bars showing data under fasting conditions should be included.
7. Authors argue on pag. 7, Results section, that tumor-bearing-rats exhibit a significant decrease in the liver to body weight ratio, particularly in males. The reader would expect a quantification of the difference between males and females that is not provided in the paper.
8. As for the increase in the mitochondrial fraction of liver tissue in tumor-bearing animals, this finding is very interesting but a measurement of the mitochondrial pellet wet weight is purely indicative. Measurements of the activity of a mitochondrial enzyme or immunoblotting analysis of a mitochondrial protein in the total liver extract (not in isolated mitochondria) would strengthen this point.
9. Authors state on p. 10 (Discussion) that differences in PUFA content occur in tumor-bearing rats, but no data set/figure on PUFA content in healthy, tumor-bearing and fasted rats is present in the paper. They should be included.
10. Some corrections in the English language are necessary.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. Conclusions in the Abstract have to be revised. It seems some words/sentence are/is missing.
2. The last paragraph of the Introduction should anticipate the details on the experimental procedure used in the study to characterize the mitochondrial structured water. A better location of this paragraph would be just after the first sentence of p. 4.
3. On p. 4, Introduction, the authors cite MTP. Does it stay for MPT (membrane permeability transition)? It does not appear in the Abbreviations.
4. Pag. 4, Materials and methods: the authors say that after animal decapitation, the blood was collected for serum separation, but it seems any measurement has been performed in serum throughout the paper.
5. Reference n. 27 should be eliminated and the statement on p. 11 which is referred to, should be indicated as “our unpublished data”.
6. The last paragraph in The Discussion: Indeed, the preservation of an increased is too speculative, as the authors do not prove the occurrence of a Bax-mediated formation of pores in liver mitochondria of tumor-bearing rats.

Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No

Declaration of competing interests:

I declare that I have no competing interests.