Reviewer’s report

Title: Breast feeding, breast milk, viruses and breast cancer.

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Reviewer: Generoso Bevilacqua

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General

I am really sorry if Authors have the convincement that I wanted to be “nasty”! Sometimes, a short written text is not enough to show clearly our opinions (both for authors and reviewers!).

I would like to be collaborative, so I’ll try to do my best!

1. Information produced about exposure to colostrum is surely relevant.
2. To me, this information seems relevant because it suggests a route for the transmission mother-baby of viruses in general.
3. Personal opinion 1: MMTV could have a role in human breast cancerogenesis.
4. Personal opinion 2: the hypothetical transmission is not via milk.
5. I do agree on the fact that gastric juice does not necessarily kill everything, but in the specific case there are several data about the fact that a large number of viral particles and a prolonged feeding are necessary to have a “cancerogenetic” infection in mice.

6. There are several data against the milk-hypothesis for human breast cancer, mainly:
   - the epidemiological studies about breast feeding protection
   - the fact that viral particles were never convincingly demonstrated in human milk.
   The data of C Ford can be only partially taken into consideration because without peer review; moreover it looks strange to me that after 3 years they are not published yet.

7. The following sentence does not seem to me opportune: “In contrast to this evidence, there is consistent evidence that the risk of breast cancer is double or more in daughters of women with breast cancer, a fact not accounted for by the presence of BRCA or other familial genes. This major contradiction in the evidence has yet to be explained.”:
   - to find families with a high incidence of breast cancer with no mutation in known genes is not rare. In this case, there are at least two possibilities: a) it is a sporadic disease; b) it is an hereditary disease due to the involvement of unknown genes. To rule out the second one, an accurate genetic analysis of the family has to be done.
   - moreover, of the 3 cited papers (3,4,6), I was not able to find the first one and I was not able to find in the second two any statement about what reported in the sentence cited above.

8. About immunity and viral infection, there are many data, old and recent, in favour of the fact that a well functioning immune system is required for an efficient infection by MMTV, being the virus diffused through lymphocytes.

9. Because the main point of the paper is the demonstration that the majority of newborns is exposed to colostrum, I would suggest to write the paper with this sequence:
   a) Background:
      - several viruses can be transmitted by milk in humans
      - a precise information about times and quantities necessary for infection is lacking
      - there are many data suggesting a viral hypothesis for human breast cancer (included those of the Authors)
   - there are several data against a milk transmission of an hypothetical human MTV
   - there is only one unpublished work (a PhD thesis) reporting a few cases of MMTV-like env gene sequences
   - in any case, both for viral diseases in general and for the hypothetical viral origin of breast cancer it seems rational and interesting to evaluate the role of colostrum, never extensively studied
   b) Discussion:
      - data obtained by this study demonstrate that a very high number of newborns is exposed to colostrum
- this represents an information relevant for a better understanding of the modalities of viral infection mother-newborn via milk
- this regards both the viruses known as “users” of the milk pathway and, even if in absence of sound data in favour of the milk hypothesis, the hypothetical HMTV too.

10. I would avoid:
- to state that “there is consistent evidence that the risk … is double or more in daughters … a fact not accounted for by the presence of BRCA …”, because not sufficiently discussed.
- to state that “it is theoretically possible for MMTV to be also transmitted by only a brief exposure to colostrum and breast milk”, because data in mice go towards the opposite direction.
- to focus on MMTV, because there are no convincing data about the milk route.

11. Title could be: Breast feeding, breast milk and viruses.

In case, I would be glad to receive e-mails directly from Authors: g.bevilacqua@med.unipi.it

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

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

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 of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.