European Journal of Science and Theology, December 2020, Vol.16, No.6, 161-166

BECOMING UNMARRIAGEABLE KIN BY SUCKLING (REDAAH)

IMPLICATIONS OF BREAST MILK STEM CELLS

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(Received 7 July 2020, revised 5 September 2020)

Abstract

Islam promotes strong ties between parents and the children and extends relationship to even the foster mother, serving the infants. To become a child of a foster-mother one of the conditions is that she breast-feeds him at least five times. The Shariah scholars have two different perspectives on this condition. This article seeks to elaborate on these distinct views, keeping in view the hypothesis of the presence of stem cells in breast milk and their role as predecessors for developing and producing majority of the body cells. Preliminary evidence develops that mother's milk contains significant amount of stem cells, which can cross the gut and differentiate and integrate into the organs of the child's body including the brain and reproductive organs to become functional, and genetically relate to his foster mother and her relatives. More experiments are proposed to substantiate the hypothesis that supports the opinion of Hanafis and Malikis Madhabs that is, if a child is breast fed once, the relationship is established, and the child becomes a child of a foster-mother.

Keywords: suckling, breast-feeding, foster-mother, stem cells

1. Introduction

During the pre-Islamic times, Arabs were accustomed to send their children to be suckled by suburban women, other than biological mothers. They believed that such healthy and free life outside cities would make them stronger, braver, and smarter. Indeed, the Prophet Mohamed himself was suckled by *Halima Saadia* from *Bani Saad* Tribe, living in the suburb of *Makkah Mukarama* with lots of animals and fresh air. *Halima* loved him like her own child, and he returned her love by being the best boy you can imagine [1]. Islam promotes strong bonds between parents and the children. It expands relationship to even the wet nurses, serving the infants. This practice was then approved by many verses in Qur'an [Surah Al-Hajj 22:2, Surah Al-Qasas 28:7]. There are also various verses about a child sucking milk from another woman in Qur'an

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[Surah Al-Bagarah 2:233]. Therefore, to become a child of a foster-mother the following conditions should prevail [1]:

a) the milk comes from a human female occasioned by pregnancy,
b) and she breast-feeds him,
c) in at least several times.

The Shariah scholars have two different opinions on this condition. The first opinion of *Imam Abu Hanifa* and *Imam Malik*: if the child takes the breast into his/her mouth but if it is not known whether he/she sucked it or not, relationship is not established because conclusions cannot be based on suspicions. However, according to *Hanfis* and *Malikis* Madhab the relationship is established [2] and the child becomes a child of a foster-mother.

The second opinion belongs to *Imam Al Shafi* and *Imam Ibin Hanbal*. The condition of sucking five times was presented by *Shafis* and *Hanbalis* Madhab. The *Dhahiris* Madhab too, has stated that marriage is not forbidden due to breast feeding unless it is carried out five times, each of which is distinct from the other [2, p. 1452].

As new evidence accumulates on the presence of stem cells in breast milk, it will be important for Shariah scholars to understand the potential impact on mother-infant relationship, especially foster mothers. Therefore, this work is based on a hypothetical proposition and that, the data that further substantiate the role of complete integration of breast milk stem cells into the infant's body is yet to be developed for this study. Several experiments to test this hypothesis could include:

1. further research on cellular component of human breast stem cells,
2. study on multilineage potential of human breast stem cells and compare them to human embryonic stem cells,
3. comparative study on cell population that show stem cell phenotype and expression of stem cell specific genetic marker in breast milk from mothers of preterm infants and full-term infants,
4. studies on the use of flow cytometer analysis of breast milk to detect the pool of cells displaying pluripotency.

This article seeks to elaborate on these distinct views, keeping in view the available data on the presence of stem cells in breast milk and their role as predecessors for developing and producing majority of the body cells.

2. Consequences of foster-milk suckling

The consequences of a child breast-feeding on a foster-mother are discussed below [3].

1. The foster mother cannot marry the child and their descendants by family relationships or by suckling, which means that it is unlawful for her to marry just the child's descendants and not the child's ancestors.
2. She becomes the mother of the child, and hence, the child cannot marry her, her descendants (who are now the brother or sister of the child), her ancestors (through suckling or family relation), or her siblings, but the child

is not prevented from marrying the children of the siblings. This means that the women whom the child cannot marry because of the foster relations are the foster mother, the foster mother's mother, mother-in-law, sister, sister-in-law and granddaughters (from her sons as well as daughters) as well as the sisters through foster relationship [4]. *Abdullah Ibn Abbas* reported that "the Prophet Mohamed said about Hamzah's daughter: 'It is unlawful for me to marry her because foster relations are like blood relations, and she is my foster brother's daughter'" [5].

3. In situations when the foster mother milk was caused due to a pregnancy from her husband, then the following would apply:
   a) The child whom she breast-feeds is now the husband's child as well, and the husband cannot marry the child or her children as they are now like his grandchildren.
   b) The husband is now the father of the child, and the child is not permitted to marry him, his ancestors, descendants, or his siblings. Imam An-Nawawi reported that "It is agreed that marrying relatives through foster relationship is forbidden" [6]. Scholars have shown consent that the foster child cannot marry his foster mother or her children. Regarding the man that is the reason for the milk, as he is the foster mother's husband, it has been claimed by all scholars that the prohibitions are applicable to him and his female relations who have been fostered and becomes his son, his children are the foster child's brothers and sisters, his siblings will be the uncles and aunts of the child and children of the foster child will be the man's grandchildren. There is no dispute about this from any scholar.

3. Impact of presence of stem cells in breast milk

Stem cells signify undifferentiated cells which can divide to generate a few offspring cells that keep functioning as stem cells and few other cells that perform differentiation (become specialized) [7]. Stem cells constitute a continuing source of the differentiated cells that form the tissues and organs of the plants and animals. When the appropriate conditions are provided in the body or a laboratory, the stem cells disintegrate to offer more cells known as daughter cells, which either turn into new stem cells (self-renewal) or into specialized cells (differentiation) with a more distinct function, for example brain cells, bone cells, blood cells or heart muscle cells [8]. There is no other cell in the body that is naturally capable of creating new kinds of cells. Stem cells originate from embryonic stem cells that emerge from three to five days old embryos. An embryo is known as a blastocyst in this stage and has around 150 cells. These stem cells are pluripotent, which means that these are able to disintegrate into a greater number of stem cells or turn into any kind of cell in the body [9].

For some decades, cells were considered to be a part of mother's milk; however, it was not known that stem cells would also be a part of the milk, till a few ground-breaking studies were presented regarding the existence of progenitor cells in breast milk [10]. These cells are the ones that exhibit a little more flexibility regarding their ability to convert into different kinds of cells compared to the other typical cells like those of the skin and heart. Breast milk has been found to include stem cells that are not just undifferentiated (i.e. not committed to convert into any cell type), but also can turn into any cell in the human body. This is defined as a feature of those stem cells that are present in the foremost stages of an embryo. However, it seems like there are identical properties in an elite group of cells present in the breast milk [10]. These cells not only exhibit identical behaviour as embryonic stem cells with respect to their capability to change into any cell in the body; rather, they also present identical proteins that are found to be particular to embryonic stem cells like OCT4, NANOG, SOX2, TRA-1-60, etc. [8].

Researchers in Turkey further examined a field that has generated feelings of excitement and amazement in the scientific community, while also presenting several questions. They repeatedly confirmed that stem cells from the mother's milk transferred to the brain of the suckling pups [11]. After reaching the brain, these cells interestingly became integrated in the brain, converting into what is required extensively there, i.e. functioning neurons and glia [11]. It is possible for the pluripotent stem cells (PSCs) to be transformed into germ cells like sperm or oocytes in the laboratory. An important point to note is that germ cells that are obtained from nuclear transfer embryonic stem cells (NT-ESCs) or induced pluripotent stem cells (iPSCs) receive the complete parental genome [12].

The use of a mouse model allowed us to show for the first time the survival of the milk stem cells and immune cells in the neonatal gat, migrating to blood and from there, travelling and mixing with the different organs of the suckling pups, comprising of the thymus, spleen, liver, kidneys, brain and the spleen. In these organs, it appears that they convert into specialized cells of every organ [13].

The basis of the TdTomato mouse model was the mouse mothers that universally expressed the red fluorescent gene in each body cell, comprising of the milk cells. The pups that did not express it were fed by these mothers. Hence, any red fluorescing cell that was present in the pups' body came from the milk [10].

The same principle was used in a new research by Aydin and colleagues, but in a distinct mouse model where the green fluorescent protein GFP was expressed universally by the mouse mothers, while it was not expressed in the pups they have fostered [11]. The earlier outcomes are now confirmed and reinforced in their study, showing that milk stem cells do survive in the gastrointestinal tract of the young ones, from where they enter into the blood and the brain of the young one. Thereafter, they are enticed by brain micro-

environmental cues to convert into specific brain cells of two kinds, which are the two main kinds of brain cells, i.e. neuronal and glial.

This result is made more interested by the existence of the blood brain barrier, the aim of which is to permit selective movement to and from the brain because of the evident need to secure this vital organ. There are limited cells that could move through it. Nonetheless, this barrier is leaky in the neonate, permitting a greater amount of trafficking than what is normally observed in adults [14].

Maternal micro chimerism, which is the movement of maternal cells to the offspring, takes place not just in utero but also while the child is lactating [15].This was earlier shown for either immune-like cells of milk or indeterminate cells of milk [16]. Currently, for the first time, this has been demonstrated for two independent groups for stem cells of breast milk in two mouse models [9]. An interesting fact is that so far all evidence backs the concept that these stem cells become active and working parts of the body of the young one [8]. Stem cells which express embryonic markers such as nestin, OCT4, SOX2, cytokeratin, SSEA4, NANOG and TRA-1 [17] are part of the breast milk.

These studies were conducted independently, and the earlier findings were confirmed consistently and reinforced all through the study. Hence, based on the strong scientific proof, it is most likely that the perspective of *Hanafis* and *Malikis* will be accepted. It is likely that a single suck of breast milk could lead to the transfer of a significant amount of stem cells. Hence, there will be differentiation and inclusion of these cells into the child's body organs, including the reproductive organs, which will make them functional. There is a genetic relationship between these cells and the cells of the foster mother and her relatives. Hence, it is indicated that the perspectives of the Muslim scholars regarding the numbers of suckling needed to become foster relatives should be re-evaluated. When a woman is the milk-mother, the child will also be the child of her husband. The husband is also the foster-father because he is part of the fertilized ovum and the embryo, in contrast to the views of *Dhahiris* Madhab.

4. Conclusions

The conclusions given below can be made from these studies:

- Stem cells are hypothesised to be present in the mother's milk, which could pass through the gut and enter the blood of the nursed offspring.
- Preliminary evidence is included, and further experiments are proposed where the hypothesis could be tested.
- Movement of stem cells from embryo to mother takes place during pregnancy through the placenta and persists largely while the child is breastfeeding.
- There will be differentiation and integration of stem cells into the organs of the child's body, comprising of the reproductive organs and brain to

become operational, and become genetically related to his foster mother and her relatives.

The views of *Hanafis* and *Malikis* Madhabs over that of *Shafis* and *Hanbalis* Madhabs are backed by this hypothesis, i.e. it is believed that the relationship is developed when the child is breast fed a single time which expected to contain thousands of stem cells, and the child is considered to be the child of the foster-mother.

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