Changes in esophageal mucosal morphology and in growth in breast feeding rats fed with milk of low or high temperature

Dear Editor,

This rather original investigation was performed some time ago but is still unpublished. Its aim was to estimate the effect of low or high temperature cow's milk given to breast feeding rats in order to study possible influence of this diet to rats, to their physical growth and also esophageal mucosal pathology.

Ten white female Wistar rats, 20 days of age were separated from their mothers and divided in 2 groups of 5 members each. Five of them were fed with milk kept at 42ºC by using a special warming device. The other 5 animals were fed with cold milk kept at 4ºC during feeding (Figure 1). The duration of feeding was 34 days. Animals were finally sacrificed with a lethal dose of ether. The two groups were examined and compared.

Figure 1. Rats fed with milk of high temperature.

The group of rats fed by the warm milk was better grown as indicated by gaining more body weight, being more active and drinking more milk. Specimens were taken from the middle esophagus and after specific treatment were examined under the electronic microscope. We found: In both groups the most impressive finding in esophageal mucosa was an edematous intercellular space in all epithelial layers with many microorganisms in these layers. Acantholysis was often identified while in other areas a keratin transformation was noticed even in the basic layers, while basic membrane was absent. Epithelial cells showed edematous mitochondria and formation of myelin bodies. Degenerative changes and interstitial edema were noticed in the chorio.

The above findings suggest that hot milk but not cold milk improves the growth of the rats studied. Cold and also hot milk had a damaging effect on the rats' esophageal mucosa.

It is obvious that many options for further research arise related to the exact limits to the range of temperature of food intake that will not cause damage to gastric epithelium.

The authors declare that they have no conflicts of interest.

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