THE EFFECT OF MICROWAVE ON THE LACTOFERRIN CONCENTRATION IN COMMERCIAL INFANT FORMULAS

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Infant milk formulas have been designed to provide infants with the required nutrients for optimal growth and development. The prebiotic effect of human milk was intensively investigated, and several so-called “bifido-factors” have been identified. One of these groups in human milk are proteins, like lactoferrin or lactalbumin, as part of the nonprotein nitrogen fraction. It has been described as factors contributing to a beneficial composition of the intestinal microbiota. Heating infant formula in a microwave oven has become a common practice in many households. This practice can affect the concentration and nutritional values of some of the naturals and added components in the infant formulas.

In this study, immunochemical methods were used to determine the immunoreactivity concentration of lactoferrin in four different powder commercial infant formulas supplemented with this protein. Also, the formula were heated at three waves (450, 550, and 650 W) in the microwave during different periods of time (15, 20, 30 and 60 s), and temperature was recorded. Western-blot analysis demonstrated the structure of the protein remains intact in the control formulas and a developed ELISA test showed the concentration of the different infant formulas ranged between 0.02 - 217 mg lactoferrin / 100 g infant formula. Results related to microwave heating demonstrated that protein immunoreactivity concentration in infant formula remains almost the same at 450 and 550 W, but decreases in more than 30% when a 650W was applied. Microwave heating can be used, but in low potency for the heating of infant formulas.