About 4,000 children are born preterm in Serbia every year. Breast milk is both food and medicine for premature babies. The First Serbian Human Milk Bank was established in 2009 at the Institute of Neonatology in Belgrade, sparking rapid development research on human milk in this region. The collaborative research between the University of Belgrade and the Serbian Human Milk Bank is focused on the quality of milk in its native form and human milk monitoring during storage and pasteurization. Adequate nutrition is essential for preterm infants emphasizing need for comprehensive analysis of human milk properties in Serbia with focus on nutritional properties, antioxidant potential and total chemical, biochemical, prebiotic and probiotic quality of mothers’ milk. Our research on in-vitro model has shown that the human milk exerted direct pharmacological relaxation effects on isolated non-vascular smooth muscle, in addition to detailed analysis of the nutritional and biological values of human milk. Lactation of preterm infants’ mothers has been examined as an additional stimulant for enhanced recovery of mothers and infants. New methods for monitoring the quality of human milk in Serbia have been developed, thus laying a solid foundation for further development and progress of human milk research in Serbia.