

PROLOGUE

The earth revolves around the sun in an orbit, and at the same time around its own axis. During the rotation the earth's axis is tilted, which positions the hemisphere towards the sun in different angles through the year. In this way we experience the four seasons every year, and day and night through 24 hours. During the spring the vegetation is in full flower and during the fall it deflowers and dies out for the winter. Concurrently, inside a woman a circle is also ongoing, as eggs mature each month in the follicles inside her ovaries. At the ovulation one of the eggs erupts from the follicle and is released into the fallopian tube. If sperm is around to fertilize the egg it starts dividing and attaches to the lining of the uterus, which initiates a pregnancy to be lasting for the following nine months. The fetus is dependent on the mother's supply of nutrients through the placenta and the umbilical cord for growth and development, but also for the synthesis and transport of vitamin D that initiates biochemical processes in the pregnant woman's body and nourishes the unborn fetus inside the placenta. Vitamin D is a hormone synthesized in the mother's skin when exposed to sunlight. However, during the winter when sunlight is limited, the supply of vitamin D to the fetus may decline because no ultraviolet B radiation from the sun can reach the surface of earth. Thus, the fetus is not only dependent on nutrients from the mother's diet, but also on the interaction between dietary nutrients and vitamin D in the mother's body, which may be essential for fetal growth and development and also important for prevention of offspring diseases later in life.