DEVELOPMENTAL STAGES OF MALARIA
IN THE HUMAN HOST

The term trophozoite embraces the first asexual stage of the parasite, from the early ring form to the completion of vegetative development. Throughout this period it maintains a single undivided mass of chromatin. In cases where several chromatin masses are visible, this is not due to a division of the nucleus but rather to fragmentation of the original mass; the fragments are in fact joined by chromatin bridges. Depending on the stage of maturity and on the species, we may find different morphological appearances. The merozoite’s penetration into a host red blood cell leads to the formation of a parasitophorous vacuole by invagination of the inner erythrocyte plasma membrane. Here, transformation into the young ring-shaped trophozoite takes place. This appearance is due to the peripheral distribution of cytoplasm and nucleus and the formation of a concave, disk-like structure; internally the cytoplasm is so thin that it does not stain and the resulting appearance is that of a colorless vacuole. During subsequent growth the parasite’s form changes from concave to spherical. This situation is unusual for a eukaryote cell (the parasite), which lives and develops in another cell (erythrocyte), and constitutes the strategy for evading the host’s immune system. However, inside the red blood cell the parasite finds an environment that is not conducive to its development from a chemical standpoint and must thus activate suitable mechanisms in order to create the right environmental conditions, obtain all the necessary nutrients from the host cell cytosol and eliminate the metabolic “waste” produced both by itself and by the host cell. A red blood cell undergoes changes in its membrane transport properties when infected by a merozoite; it releases substances which interact with the cell membrane, thus favoring endocytosis; the parasite engulfs a portion of the erythrocyte’s cytosol and takes on the appearance of a ring enclosed by a membrane in a parasitophorous vacuole. The end result is a situation where the parasite is surrounded by .....................