INTERACTIONS OF SYMBIONTS AND ANTIMICROBIAL FACTORS IN TRIATOMINES

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All postembryonic developmental stages of triatomines are obligate bloodsuckers; their development strongly depends on their being supplied with symbionts, which are transmitted in the population via coprophagy. Also they swallow air before moulting, whereby non-symbiontic, airborne microorganisms enter the digestive tract. The latter is divided into two anterior midgut regions - the small cardia and the blood-storing, strongly distensible stomach - and the blood digestive posterior midgut, i.e. the small intestine, followed by the rectum. After blood ingestion the number of symbionts in the cardia and stomach increases about 18-fold, up to 800 millions in *Rhodnius prolixus* and 1800 millions in *Triatoma infestans*. After passage to the small intestine, only 0.01% of this population survives, with no significant changes of symbiont density within 15 days after blood intake. Decrease of symbiont density after passage into the small intestine and constant numbers afterwards seem to be the result of an active control. In photometric determinations, the antibacterial activity of the stomach content increased parallel with the number of symbionts. Electrophoresis and zymography of the content of the stomach and small intestine reveal that the main activity is caused by proteins of about 14 kDa and results from different factors. The genome of *T. infestans* contains several genes encoding different lysozymes and defensins. The genes for lysozyme1 and defensin are strongly expressed in the stomach and at a much lower level in the small intestine. Lysozyme 2 is more unusual, the conserved amino acid residues of the active site of classical c-type lysozymes, glutamate and aspartate are replaced by valine and tyrosine. The discrepancy between the number of symbionts and the expression level and the activity of antimicrobial factors will be discussed.