

# CULTURE OF *CULEX* MOSQUITOES WITHOUT BLOOD MEALS

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From a standard laboratory strain of the tropical house mosquito, *Culex quinquefasciatus*, a sub-population was bred by feeding the females on an artificial diet, without the use of live animals or whole blood. This blood replacement diet for female mosquitoes was designed to simulate the tonicity and density of host blood and was based on ovalbumin, soya infant formula, globulins and adenosine tri-phosphate. Female adults of *C quinquefasciatus* were fed the artificial blood formula from 'Parafilm' wax membrane-covered beakers. The diet was heated by radiant heat from a chamber containing an exothermic chemical reaction. This maintained the diet at a temperature of 33-37°C for a period of up to 6 hours, sufficient time to enable all the female mosquitoes to imbibe to satiation. After six generations on the artificial diet, fecundity stabilised to a satisfactory level, averaging approximately 85% of the 'control' strain fed on whole blood from live anaesthetised guinea pigs. This amounted to 156 offspring per female from 9 feeds on the artificial diet compared with 183 offspring per female from 6 feeds of whole blood. Adult weight of *C quinquefasciatus* females was not significantly different, from generation 6 onwards, for strains fed on artificial diet or whole blood. Sex ratio and fertility of egg rafts were also equivalent for the two strains. The artificially fed strain has been maintained for >50 generations, casual observation suggests the desire to bite humans remains undiminished.

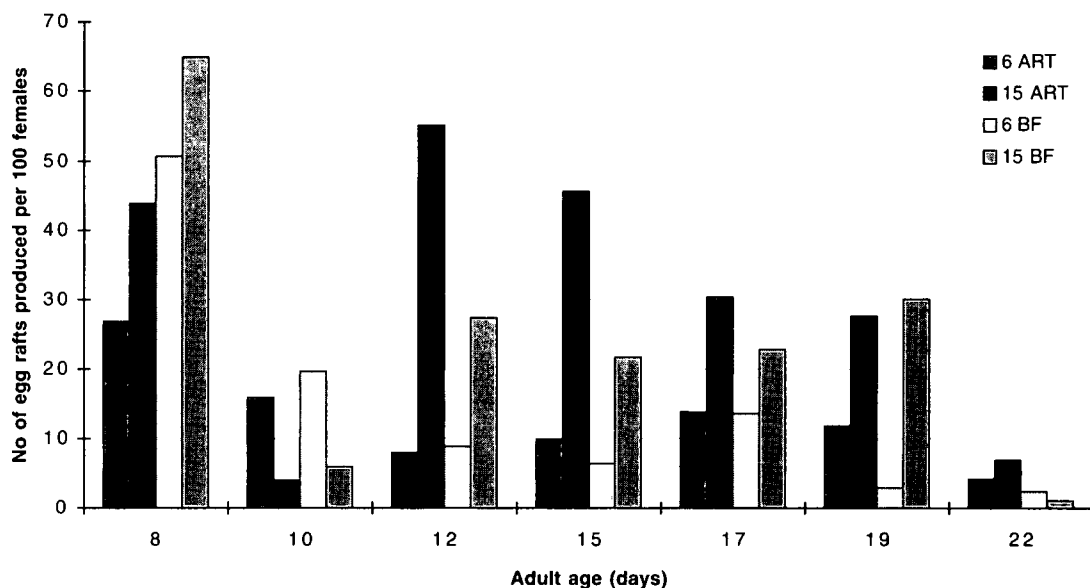


Figure 1. Relation between egg raft production and age of *Culex quinquefasciatus* parents fed on blood (BF), or membrane fed with artificial diet (ART)

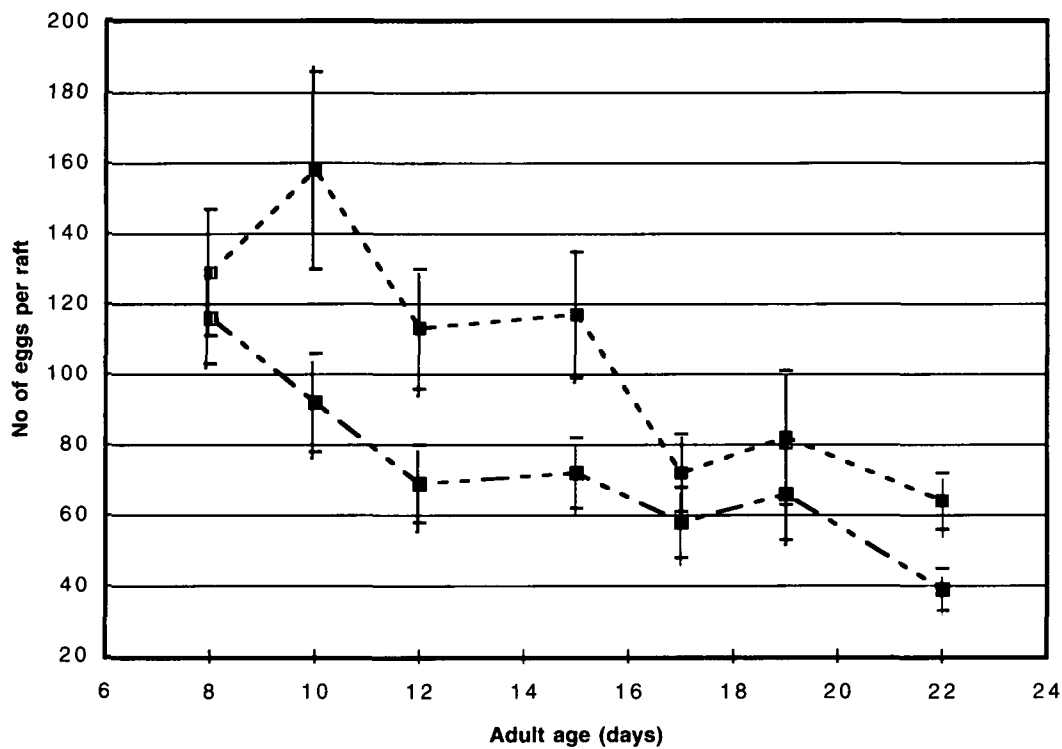


Figure 2. Relation between the adult age of female *Culex quinquefasciatus* and their number of eggs per raft on a blood diet (BF), or membrane fed with artificial diet (ART)