Abstract

Depression is a state of mind including excessive sensitivity to criticism, fear of rejection, lack of self esteem and deficiency in the ability to experience pleasure. About 15% of adult human population is believed to be affected by depression at any given time. Antidepressants are drugs prescribed to get rid off from this problem. When administered in appropriate doses, they relieve depression disorder. There are four classes of antidepressants SSRIs (Selective serotonin reuptake inhibitors) TCAs (Tricyclic antidepressants) MAOIs (Monoamine oxidase inhibitors) and SNRIs (Selective norepinephrine reuptake inhibitors). Although antidepressants give relief from depression, continued use of them causes other side effects including certain heart ailments and cancer. It is suspected that they even have genetic effects. It is shown that they cause sexual dysfunction in mouse. However there is no direct experimental evidence on any of these effects in humans. Moreover, these effects cannot be studied directly in human subjects. This prompted the author to take up the present studies on the effects of four antidepressants viz., sertraline, duloxetine, doxepin and nortryptyline, each belonging to a separate class, on sexual behavior and gene expression in Drosophila which is considered as most suitable test system for such studies. The result obtained by the author is divided into 4 chapters. The study of sexual behavior of treated flies showed that the courtship latency and mating latency increased while copulation duration decreased due to antidepressant treatment (Chapter I). The treatment also decreased the reproductive fitness and viability of the flies which was evident because of decrease in fecundity, hatchability, fertility, viability and enhancement of rate of development (Chapter 2). The author also noticed the appearance of puffs on the polytene chromosomes of Drosophila which indicates that they affect gene transcription (Chapter 3). The alpha and beta
esterase pattern was also affected by treatment indicating that the antidepressants affect gene function (Chapter 4). These effects were noticed both in the treated adults and in their progeny. Thus the study shows that the antidepressants affect the sexual behavior, fitness and overall gene expression in *Drosophila*. 