

CHAPTER VI

CONCLUSION

From this research work, the following conclusions can be drawn.

1. We have used combined techniques of gamma irradiation, tissue culture and molecular cloning for improving the yield of the antimalarial artemisinin production in *A. annua*.
2. Stable high-yielding plants of *A. annua* can be obtained by low-dose gamma-irradiation of shoot-tips followed by *in vitro* culture of the survived plantlets
3. There is a clear individual correlation between the artemisinin content *in vitro* irradiated plantlets and the *ex vitro* plants grown in the green-house and open field, indicating the permanent effect of the gamma irradiation on the biosynthetic pathway of artemisinin.
4. Amorpha-4,11-diene synthase catalyzing the first step of the artemisinin pathway appears to be important for the yield improvement since its enzyme activity is closely correlated with the artemisinin content in the irradiated plantlets.
5. Importantly, the creating of transgenic *A. annua* by insertion of amorpha-4,11-diene synthase gene into the plant have led to a 2-3 fold increase in both the enzyme activity and artemisinin content strongly suggesting the importance of this target enzyme of artemisinin production in this plant.