

## Summary of the Project

1. **Name and Address Of The Principal Investigator:** Dr. M. R. Chandrakar.
2. **Name and Address Of The Institution:** Shiksha Mandal's Jankidevi Bajaj College Of Science, Wardha. (Affiliated To Rashtrasant Tukdoji Maharaj University, Nagpur).
3. **Title of the Project:** Effect Of Waves Generated By Mobile Phones On The Developing Chick Embryos.
4. **UGC Approval Letter No. And Date:** F.NO. 42-510/2013(SR) dated March 22, 2013.
5. **Date of Implementation:** 09/04/2013 - 31/03/2016.
6. **Tenure of The Project:** 3 years (with extension of 1 year by UGC).
7. **Summary Of The Findings :**

Today mobile phones are an inseparable part of human life. These mobile phones operate on radiations to set up a connection which are of electromagnetic radiofrequency type radiations that might be hazardous for human as well as other living being. Various studies have been performed which proved that the use of mobile phones might cause adverse health effects in humans. Another data mentioned that the number of miscarriages and number of new born babies with birth defects are also increasing consistently. There are different environmental and genetic factors responsible for this. But the exact reasons are not understood.

The present work has been carried out to check whether there would be any effects of mobile phone radiations on developing embryo. To study all the parameters in human could not be possible due to ethical issues.

Hence in the present study, the fertilized chick eggs were used. The eggs were exposed to the regular intervals of mobile phone radiations and developmental changes had been observed in vivo condition and compared with that of control chick embryos that had not been exposed to mobile phone radiations. Early stages of development were found to be similar in all chordates including fishes, amphibians, reptiles, birds and mammals. Hence the development of chick embryo could be compared with the three trimesters of in-utero development of human embryo. Hence by using chick eggs the complete development had been observed and various parameters were studied to see effects if any.

From the present study, it has been concluded that mobile phone radiations are responsible for increase in mortality rate in chick embryos. The radiations emitted from mobile phones might be a factor to caused rapid growth and development in chick embryos. This might caused due to overheating of embryonic tissues inside the egg. The electromagnetic radiations of frequency bandwidth 850-1900 MHz were able to cause deformities and developmental anomalies in developing chick embryos at various stages of incubation period. The deformities such as malformations of limb, beak and eyes during development as well as subcutaneous bleeding also take place in exposed embryos.

There were alterations in liver and brain cyto-architecture in EMF-exposed chick embryos that might cause hazardous effects in chick embryos while EMF could not have any measurable effects on histology of heart. The changes in biochemical measures in EMF-exposed embryos such as concentration of glucose on 7<sup>th</sup> and 14<sup>th</sup> day of incubation and concentration of cholesterol on 7<sup>th</sup> day of incubation was not at significant level while measurable significant changes had been takes place in cholesterol concentration on 14<sup>th</sup> day of incubation and protein concentration on both 7<sup>th</sup> and 14<sup>th</sup> day of incubation. It had been suggested that there should be very low usage of mobile phones during pregnancy as it might cause developmental disorders in the foetus and might increase the risk of mortality of developing foetus.