Aim and Objectives
Aim:

It is hypothesized that several molecular mechanisms play a significant role in synergistic way in oral cancer initiation and progression. The major aim of the present study was to carry out comprehensive analysis of p53, the gatekeeper of human genome in conjunction with, MDM2, HPV status, hTERT, VEGF, MMP2 and MMP9 which are implicated in immortalization, angiogenesis, invasion and metastasis and have potential role in the etiopathogenesis of oral cancer.

Objectives: Major objectives of the investigation were:

1. To study p53 and MDM2 gene polymorphisms, mutations and HPV infection in oral cancer patients.
   - To estimate risk of oral cancer development associated with p53 intron 3 (rs17878362), exon 4 (rs1042522) and intron 6 (rs1625895) and MDM2 SNP309 (rs2279744) polymorphisms.
   - To analyze gene-environment interaction (p53 and MDM2 polymorphisms and tobacco exposure) and risk of oral cancer development.
   - To analyze association of p53 and MDM2 polymorphisms with clinico-pathological features, recurrence and survival of oral cancer patients.
   - To analyze gene-gene interaction (p53 and MDM2 polymorphisms) and risk of oral cancer development and its association with clinico-pathological features, recurrence and survival of oral cancer patients.
   - To identify frequency and type of p53 mutations in oral cancer patients and its association with clinico-pathological features, recurrence and survival of oral cancer patients.
   - To study interactions between p53, MDM2 polymorphisms and p53 mutations and their association with clinico-pathological features, recurrence and survival of oral cancer patients.
   - To estimate the frequency of HPV infection in oral cancer patients and its association with p53 gene status.
2. To investigate expression of genes involved in immortalization (hTERT), angiogenesis (VEGF) invasion and metastasis (MMPs) in oral cancer patients.
Aim and objectives

- To evaluate hTERT mRNA levels in oral cancer patients and their association with clinico-pathological features, recurrence and survival of oral cancer patients.
- To estimate mRNA as well as protein levels of VEGFA, VEGFC and VEGFD in oral cancer patients and their association with clinico-pathological features, recurrence and survival of oral cancer patients.
- To estimate mRNA as well as protein levels of MMP2 and MMP9 in oral cancer patients and their association with clinico-pathological features, recurrence and survival of oral cancer patients.

3. To evaluate the correlation between p53, MDM2 polymorphisms, p53 mutations, hTERT, VEGFA, VEGFC, VEGFD, MMP2, MMP9 and their role in molecular pathogenesis of oral cancer.
   - To evaluate association of hTERT expression with p53, MDM2 polymorphisms and p53 mutations.
   - To evaluate association of VEGFA, VEGFC and VEGFD expression with p53, MDM2 polymorphisms and p53 mutations.
   - To evaluate association of MMP2 and MMP9 with p53, MDM2 polymorphisms and p53 mutations.