3.0 AIMS AND OBJECTIVES

Exposure to arsenic can produce reactive oxygen species (ROS) such as: superoxide radicals, hydroxyl radicals, H_2O_2 (hydrogen peroxide), hypochlorous acid or singlet oxygen. These products can interact with cellular ingredients (lipids, proteins, nucleic acids) and deed lipid peroxidation, membranous injury and diminishing the enzymes activities thus influence many physiological processes and finally cellular death. Since the female population from wide arsenic affected zone is suffering from infertility as a consequence of consuming arsenic contaminated drinking water, here we have taken an effort to justify whether vitamin B_{12} and folic acid are able to attenuate uterine disorders induced by this endocrine disruptor. Moreover the available conventional management strategy to combat the arsenicosis in human extensively depends on the execution of painful intramuscular chelating therapy with dimarcaprol or British Anti Lewsite (BAL) with moderate to severe adverse effects. Thus, the goal of this study was to demonstrate the role of non-invasive oral administration of B_{12} and folic acid in the amelioration of arsenic mediated utero-ovarian degeneration in addition to arsenic induced hepatic injuries.

In this work following objectives are followed:

i. To explore the regulation of certain antioxidant mechanism against arsenic mediated oxidative stress in ovary, uterus, and liver of experimental rat model.

ii. Long term goal is to validate and optimize the efficacy of vitamin B_{12} and folic acid for therapeutic use against arsenic toxicity.

To evaluate the arsenical effect on utero-ovarian activities as well as delineation of arsenite toxicity by the co-administration of Vit-B_{12} and folic acid either alone or in combination; experimental schedules were designed as followed:

a) Dose dependent response of sodium arsenite ($NaAsO_2$) on ovarian and uterine activities.

b) Duration dependent response of $NaAsO_2$ on utero-ovarian activities.

c) Effective dose selection of Vit-B_{12}, folic acid alone or in combination in $NaAsO_2$ treated rats in the reduction of toxicity level if any.

d) Is there any adverse reaction of effective dose of Vit-B_{12}, folic acid when co-administered alone or in combination in arsenicated rats.

e) Efficacy of selective doses of vitamin B_{12} and folic acid in $NaAsO_2$ treated rats metabolic organ in the reduction of toxicity level if any.

f) Withdrawal of sodium arsenite treatment with or without co-administration of Vit-B_{12}, folic acid.

g) In vitro studies with or without co-administration of Vit-B_{12}, folic acid on ovarian steroidogenesis in arsenic treated rats.