**Chapter 1**

**Evaluation of *C. glabrata* growth, treated with antifungal drug under different environmental conditions.**

**Introduction**

Antifungal drugs mount selective pressure on the organisms, leading to survival of only those cells that acquire resistance. However, currently available antifungal drugs are mainly fungistatic rather than fungicidal empowering the pathogenic fungal cells to quickly adapt to hostile environments by few genetic modification and improved genome plasticity. This also promotes survival of resistant progeny under the selective pressure.

Adhesion and biofilm formation are the key virulence traits present in Candida species to cope-up with nutritional and environmental stress. Biofilm formation inhibits penetration of substances and protects fungal cells from host immune system. Evidently, biofilms have significant resistance against antifungal drugs leading to high mortality (Musa et al., 2018). When compared to Non *Candida albicans* Candida Species (NCAC), *C. glabrata* biofilms exhibits characteristic features like highest number of biofilm cultivable cells with high quantities of proteins and carbohydrates but relatively low total biomass and metabolic activity (Musa et al., 2018). These contrasting features have probably evolved *C. glabrata* as innate antifungal drug resistant organism and fit to survive under competitive pressure.

*Candida glabrata* shows

However, which all scenarios have effect to induce resistance is still not clear. Here, we attempt to elucidate multi-dimensional cause of antifungal drug resistance in *C. glabrata*.

**Results**

1. **Oxidative stress treated *C. glabrata* cells elevated resistance to fluconazole**
2. ***C. glabrata* cells exhibits different growth profile under different growth medium**
3. **Fluconazole effect varies with glucose concentration**
4. **Cells growing in acidic pH are more resistant to Fluconazole than alkaline**
5. **Pre-exposure to Fluconazole improves resistance against higher concentration of Fluconazole**
6. **Days affect flu effect**