General conclusions...

1. **The sub-toxic doses of acidified sodium nitrite and *S*-nitrosoglutathione were different for *S. cerevisiae*.** Cell viability assay was revealed that the sub-toxic dose of acidified sodium nitrite or *S*-nitrosoglutathione were 0.5 mM and 0.25 mM respectively for *S. cerevisiae*.
2. **Alteration in redox homeostasis might give protection to overcome the nitrosative stress.** It was found that GSH/GSSG ratio was significantly higher in presence of acidified sodium nitrite or *S*-nitrosoglutathione.
3. **Activities of catalase, glutathione reductase, were required to overcome the nitrosative stress.** Biochemical assays revealed that the activity of catalase, glutathione reductase were found to be increased in presence of acidified sodium nitrite or *S*-nitrosoglutathione.
4. **TCA cycle as well as respiration in *S. cerevisiae* was significantly affected under nitrosative stress.** By performing enzymatic assays, it was found that the activity of different TCA cycle enzymes were decreased under nitrosative stress.
5. **Ethanol fermentation rate as well as alcohol dehydrogenase activity were found to be increased under nitrosative stress.** By using standard methods of alcohol estimation, it was observed that ethanol production and specific activity of ADH were increased in presence of acidified sodium nitrite or *S*-nitrosoglutathione.
6. **ADH3 might play an essential role under nitrosative stress.** qPCR analysis revealed that *ADH3* gene expression was found to be increased in the presence of acidified sodium nitrite and *S*-nitrosoglutathione.
7. **Aconitase activity was affected due to protein tyrosine nitration and *s*-nitrosylation whereas ADH was not prone to these.** Western blot analysis by using anti 3-nitrotyrosine antibody, the signal of PTN was found in 0.3 and 0.5 mM acidified sodium nitrite treated aconitase whereas the signal of PTN was not found in acidified sodium nitrite treated ADH. On the other hand, signal for *s*-nitrosylation was observed only in *s*-nitrosoglutathione treated aconitase.
8. **Variation in glucose metabolism might be an important part of the defence mechanism of *S. cerevisiae* to counteract the nitrosative stress.** In this study, it was observed that the activities of fermentative enzymes were increased whereas activities of TCA cycle enzymes were decreased. This altered metabolic strategy might be conjoined with the antioxidant system to overcome the nitrosative stress.
9. **Nitrosative stress exposed immobilized *S. cerevisiae* cells may be used in industrial ethanol production.** It was observed that nitrosative stress exposed immobilized *S. cerevisiae* cells produced ethanol efficiently for several cycles.