

LIST OF FIGURES

Chapter	Page Nos.
Chapter 1	
1.1. Cross-section of a normal and a polycystic ovary.....	4
1.2. Structure of an ovarian follicle.....	7
1.3. Schematic representation of the ovary indicating steroid hormone receptor sites and cellular sites of steroid hormone production.....	8
1.4. Intracellular pathways that affect the regulation of ovarian steroid synthesis.....	10
1.5. Pathophysiology of Polycystic Ovarian Syndrome (PCOS).....	16
1.6. Salient clinical features demonstrated by different experimental models of polycystic ovary syndrome.....	25
Chapter 2	
2.1. Certificate of plant sample authentication and quality control parameters.....	36
2.2. Setup for Soxhlet extraction of non-polar phytocomponents of Aloe vera gel.....	38
2.3. Setup for column chromatography.....	42
2.4. Setup for excretion study.....	53
Chapter 3	
3.1. TLC analysis of partially-purified isolates from petroleum ether extract of Aloe vera gel.....	83
3.2. Product ion spectrum of the major phytocomponents identified in LP1, LP2, LP3, LP4 and LP5 by GC/MS and NIST Library.....	89
3.3. Representative HPLC Chromatograms of LP1, LP2, LP3, LP4 and LP5.....	90
3.4. Representative HPLC Chromatograms for Pharmacokinetic and tissue distribution studies.....	96
3.5. Plasma concentration–time curves of non-polar phytocomponents of Aloe vera gel in rats.....	97
3.6. Tissue distribution of non-polar phytocomponents of Aloe vera gel in rats.....	99
3.7. Faecal and urinary excretion of unmetabolized non-polar phytocomponents of Aloe vera gel in rats.....	100
3.8. Pharmacodynamic effect of non-polar phytocomponents of Aloe vera gel on the hormone profile of rats.....	101
3.9. Effect of non-polar phytocomponents of Aloe vera gel on the liver and kidney toxicity parameters.....	102

Chapter 4

4.1. Representative image of the molecular docking interactions.....	111
4.2. Dose dependent effect of the PPNPPs isolated from Aloe vera gel on the cell viability of KGN cell-line.....	116
4.3. Morphology of KGN cell line upon subjecting them to PPNPPs isolated from Aloe vera gel at the IC50 concentration.....	117
4.4. Effect of PPNPP of Aloe vera gel on the hormone secretion.....	118
4.5. Effect of PPNPP of Aloe vera gel on the gene expression of key steroidogenic regulators.....	119
4.6. Effect of PPNPP of Aloe vera gel on the gene expression of steroid receptors.....	120
4.7. Effect of PPNPP of Aloe vera gel on the gene expression of Insulin Receptor.....	121

Chapter 5

5.1. Cell viability of isolated luteinized granulosa cells.....	129
5.2. Characterization of isolated luteinized granulosa cell markers.....	130
5.3. Effect of Hyperinsulinemia and Hyperandrogenaemia on Cell Viability of Primary Culture of Luteinized Granulosa Cells.....	131
5.4. Effect of Hyperinsulinemia and Hyperandrogenaemia on the morphology of Primary Culture of Luteinized Granulosa Cells.....	132
5.5. Synergistic effect of hyperinsulinemia and hyperandrogenaemia on the transcript levels of key steroidogenic targets of Primary Culture of Luteinized Granulosa Cells.....	134
5.6. Effect of Hyperinsulinemia and Hyperandrogenaemia on Cell Viability of KGN cell-line.....	137
5.7. Effect of Hyperinsulinemia and Hyperandrogenaemia on the morphology of KGN cell-line.....	137
5.8. Synergistic effect of hyperinsulinemia and hyperandrogenaemia on the transcript levels of key steroidogenic targets in KGN cell-line.....	138
5.9. Effect of PPNPPs isolated from Aloe vera gel on the Transcript Levels of Key Steroidogenic Targets in an “in-vitro” PCO- like model.....	142
5.10. Effect of PPNPPs isolated from Aloe vera gel on the Hormone secretion in an “in-vitro” PCO- like model	144

Chapter 6

6.1. Plan of work for development of PCOS mouse model.....	150
6.2. Plan of work for evaluating the bioactivity of phytochemicals in Letrozole induced mouse model.....	151

6.3. Dose and time- dependent effect of Letrozole on body weights of adult female Balb/c mice.....	152
6.4. Dose and time- dependent effect of Letrozole on hormone profile of adult female Balb/c mice.....	153
6.5. Dose and time- dependent effect of Letrozole on the ovarian histology levels of adult female Balb/c mice.....	155
6.6. Effect of different treatments on the body weight, oral glucose tolerance test and fold change in gene expression levels of Insulin Receptor in ovaries of Letrozole induced PCOS mice model.....	157
6.7. Effect of different treatments on the Lipid Profile of Letrozole induced PCOS mice model	160
6.8. Effect of different treatments on ovarian histology of Letrozole induced PCOS mice model.....	163
6.9. Effect of different treatments on hormone profile of Letrozole induced PCOS mice model.....	164
6.10. Effects of different treatments on the gene expression of Gonadotropin Receptors in ovaries of Letrozole induced PCOS mice.....	165
6.11. Effects of different treatments on the gene expression of Steroid Receptors in ovaries of Letrozole induced PCOS mice.....	166
6.12. Effects of different treatments on the gene expression of key Steroidogenic regulators in ovaries of Letrozole induced PCOS mice.....	167
6.13 Summary of evaluation of therapeutic effect of partially purified non-polar phytocomponents of Aloe vera gel in Letrozole induced PCOS mouse model.....	179