Summary & Conclusion
SUMMARY AND CONCLUSION

The present study has wide prospective to describe the chemotherapeutic potential of Nobiletin by assessing the biochemical and molecular alterations observed in Benzo(a)Pyrene induced pulmonary carcinogenesis in experimental Swiss albino mice. Lung cancer mortality rate grow at alarming level in the world in foreseeable future. The prognosis of metastatic carcinoma remains a serious concern and accounts for more than half of all cancer deaths. Chemotherapy via nontoxic agents could be one approach for decreasing the incidence of lung cancer. Many naturally occurring agents have shown chemotherapeutic (anticancer) potential in a variety of bioassay systems and animal models.

The several clinical and epidemiological evidence state that dietary constituent of flavonoids are associated with reduced risk of cancer. Numerous biochemical and molecular abnormalities occur in cancerous conditions. These biochemical alterations help us to study the chemothrapeutic efficacy of nobiletin during experimental carcinogenesis. Hence, the present study is an effort to evaluate the chemotherapeutic efficacy of Nobiletin by studying the biochemical and molecular alterations observed in experimental lung cancer in female Swiss albino mice.

The Findings of the Study have been Summarized below

Supplementation of Nobiletin significantly reduced tumor incidence, increased body weight and decreased lung weight when compared to lung cancer bearing animals.

A marked increase in serum tumor marker CEA and tissue markers such as ADA, AHH, GGT, 5’ND and LDH observed in B(a)P induced lung cancer mice was effectively prevented by Nobiletin treatment suggesting its anti-tumorogenic effect.
Mice treated with Nobiletin appreciably attenuated the increase in lipid peroxides and prevented the excessive consumption of enzymic and non-enzymic antioxidants showing its antioxidant potential.

The altered activities of phase I and phase II drug metabolizing enzymes during B(a)P induced lung cancer were considerably optimized in animals treated with Nobiletin has the ability to inhibit event of carcinogenesis reveling its anti-carcinogenic property.

Animals treated with Nobiletin restored the alterations in the activities of TCA cycle enzymes and electron transport chain complexes. This demonstrates the ameliorating effect of Nobiletin on mitochondrial functional status the reversal of these changes showing the tendency of Nobiletin to offer protection at subcellular levels.

Histological abnormalities observed in B(a)P administered lung cancer animals were markedly mitigated on Nobiletin treatment highlighting its chemoprotective nature.

Changes in the expression of PCNA during lung cancer were reversed upon Nobiletin supplementation. This reveals its anti-proliferative and protective effect. Nobiletin supplementation notably extenuated the alterations in COX-2, MMP-2 and MMP-9 in tumor bearing animals. This shows the anti-angiogenic and anti-metastatic activity of Nobiletin against lung carcinogenesis.

Decrease in mast cell density in Nobiletin supplemented animals compared to B(a)P induced lung cancer animals further implied the anti-inflammatory and anti-metastatic role of Nobiletin.

Apoptosis inducing property of Nobiletin was ascertained with the help of agarose gel electrophoresis. The above studies clearly substantiated that Nobiletin can induce apoptosis and thereby restricts lung tumorigenesis.
CONCLUSION

The results of our present research provides evidence for the biochemical and molecular cellular responses induced by Nobiletin which could be linked to its potent anti-carcinogenic and protective role against lung cancer. Thus Nobiletin could be developed as a plausible anti-cancer agent against lung carcinogenesis and subjected to clinical trials. The above experimental results obtained in terms of both biochemical and molecular changes which were also histologically confirmed indicate that Nobiletin has definite chemotherapeutic efficacy against B(a)P induced lung cancer. Further studies are in progress to confirm the anticancer potential of Nobiletin in the treatment of lung cancer.