Conclusion
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From the results obtained during the research investigation on benzo[b]furan and coumarin derivatives, following conclusions have been drawn.

- In chapter 2, we have described the synthesis of various β-amino carbonyl compounds of coumarin and benzofuran by a three component Mannich reaction of 3-acetyl-2H-chromen-2-one/1-(1-benzofuran-2-y1) ethanone with p-substituted aromatic aldehydes and aromatic amines in the presence of ceric ammonium nitrate as a catalyst. The newly synthesized compounds were screened for antimicrobial and antioxidant activities. From the structure activity relationship (SAR) studies it is evident that the electron withdrawing groups at the para position of aromatic ring particularly exhibited potential antimicrobial activity. This was further proved by docking studies on GlcN-6-P.

- In chapter-3, we have designed an efficient synthetic route for the synthesis of some 2, 6-bis (1-coumarin-2-y1)-4-(4-substituted-phenyl) pyridine derivatives. These compounds were synthesized by the reaction of 3-acetyl coumarin/5-bromo 3-acetyl coumarin with substituted aromatic aldehydes and ammonium acetate under acidic condition. The newly synthesized compounds were screened for antimicrobial and antioxidant activities. Some of the compounds showed promising antimicrobial and antioxidant activity.

- In chapter-4a, we have reported the synthesis of benzofuran barbitone and benzofuran thiobarbitone derivatives. The newly synthesized compounds were screened for antimicrobial and antioxidant activities. Some of the compounds displayed moderate to good antimicrobial and antioxidant activity.
• Chapter-4b describes the synthesis of 5-[(2, 4-disubstituted phenyl) (5-disubstituted-1-benzofuran-2-yl) methylidene]-2, 2-dimethyl-1, 3-dioxane-4, 6-dione derivatives by condensation of 5-substituted-1-benzofuran-2-yl) (2, 4-disubstituted phenyl) methanone derivatives with Meldrum's acid. The newly synthesized compounds were screened for antibacterial and antioxidant activities. Some of the compounds displayed comparable antimicrobial and antioxidant activity with standard.

• In chapter-5a, we have synthesized 3-(6-substituted-2-oxo-2H-chromen-3-yl)-1-(4-substituted)-1H-pyrazole-4-carbaldehyde derivatives by Vilsmeier formylation of coumarin hydrazones at reflux temperature and 2-substituted-3-(1-(4-substituted)-4-((Z)-(5, 6-dimethoxy-1-oxo-1H-inden-2(3H)-ylidene) methyl)-1H-pyrazol-3-yl)-2H-chromen-2-one derivatives. The target compounds were screened for in vitro antioxidant and in vivo antihyperglycemic activity against Streptozotocin-nicotinamide induced Adult Wistar rats and the results revealed that the compounds having electron donating group on the phenyl ring showed prominent decrease in glucose concentration.

• In chapter-5b, we have reported the synthesis of 3-(5-Substituted -1-benzofuran-2-yl)-1-(4-substituted phenyl)-1H-pyrazole-4-carbaldehyde by Vilsmeier formylation of at reflux temperature in good yield. Further the target compounds were synthesized by condensation of (Z)-2-((3-(5-Substituted benzofuran-2-yl)-1-p-substituted -1H-pyrazol-4-yl) methylene)-2, 3-dihydro-5, 6-dimethoxyinden-1-one with 5,6-dimethoxy-2,3-dihydro-1H-inden-1-one at room temperature using NaOH as a base. The selected synthesized compounds were subjected for analgesic and
Anti-inflammatory activity by abdominal constriction method and Carrageenan-induced rat paw edema method respectively. The activity results revealed that, some of compounds represented their biological potency as compared to standard drug.

In chapter-6, we have synthesized three new series of 2-[(5-substituted-1H-benzimidazol-2-yl) sulfanyl]-1-(5-substituted-1-benzofuran-2-yl) ethanone, 6-substituted-3-(5-substituted-1-benzofuran-2-yl)[1,3]thiazolo[3,2-a]benzimidazole and 6-substituted-3-(5-substituted-1-benzofuran-2-yl)-2-(substituted-1-ylmethyl) [1,3] thiazolo [3,2-a] benzimidazole derivatives using 5-substituted 2-acetyl benzofuran and 5-substituted 2-mercapto benzimidazole as starting materials.

All the synthesized compounds were evaluated for antifungal and anthelmintic activities. The result revealed that, the 6-substituted-3-(5-substituted-1-benzofuran-2-yl)[1,3]thiazolo[3,2-a]benzimidazole were more effective against the tested fungal strains and the compounds 2-[(5-substituted-1H-benzimidazol-2-yl) sulfanyl]-1-(5-substituted-1-benzofuran-2-yl) ethanone emerged as highly active against the tested earthworm.

The selected compounds were subjected for in silico molecular docking studies using Glucosamine-6-Phosphate synthase enzyme for antimicrobial activity (Chapter- 2, 3 and 4a) and β-tubulin, target protein elite to the parasites (Chapter-6) in anthelmintic activity. From the results it is evident that many of the synthesized compounds have shown variable degree of biological and pharmacological activities.