potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D132) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{17}H_{19}N_3O_2S$, M.W: 329.42, MP: 124-126$^0$C, Yield: 72%

**(3) Preparation of 2-(4-Methoxy-3-methyl-pyridin-2-ylmethylsulfanyl)-6-pyrrol-1-yl-1H-benzoimidazole (DJP/D133):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 2-Chloromethyl-4-Methoxy-3-Methyl-Pyridine (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D133) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{19}H_{18}N_4OS$, M.W: 350.44, MP: 135-138$^0$C, Yield: 71%

**(4) Preparation of N-(4-Fluoro-phenyl)-2-(6-pyrrol-1-yl-1H-benzoimidazol-2-ylsulfanyl)-acetamide (DJP/D134):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 2-Chloro-N-(4-fluoro-phenyl)-acetamide (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C

temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D134) and dry the material at 50-55°C.
Colour: Pale yellow, M.F: $C_{19}H_{15}FN_4OS$, M.W: 366.41, MP: 175-178$^0$C, Yield: 66%

**(5) Preparation of N-(4-Fluoro-phenyl)-3-[6-(methyl-vinyl-amino)-1H-benzoimidazol-2-ylsulfanyl]-propionamide (DJP/D135):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 3-Chloro-N-(4-fluoro-phenyl)-propionamide (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D135) and dry the material at 50-55°C.
Colour: Pale yellow, M.F: $C_{20}H_{17}FN_4OS$, M.W: 380.44, MP: 158-160$^0$C, Yield: 80%

**(6) Preparation of 2-(4-Methoxy-3-nitro-benzylsulfanyl)-6-pyrrol-1-yl-1H-benzoimidazole (DJP/D136):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 4-Bromomethyl-1-methoxy-2-Nitro benzene (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This

organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D136) and dry the material at 50-55°C.
Colour: Pale yellow, M.F: $C_{19}H_{16}N_4O_3S$, M.W: 380.42, MP: 124-128$^0$C, Yield: 68%

**(7) Preparation of 2-(2-Nitro-benzylsulfanyl)-6-pyrrol-1-yl-1H-benzoimidazole (DJP/D137):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 1-Bromomethyl-2-nitro benzene (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D137) and dry the material at 50-55°C.
Colour: Pale yellow, M.F: $C_{18}H_{14}N_4O_2S$, M.W: 350.39, MP: 136-139$^0$C, Yield: 81%

**(8) Preparation of 2-Benzylsulfanyl-6-pyrrol-1-yl-1H-benzoimidazole (DJP/D138):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and Bromomethyl benzene (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the

reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D138) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{19}H_{19}N_3S$, M.W: 321.44, MP: 126-125$^0$C, Yield: 62%

**(9) Preparation of 4-(6-Pyrrol-1-yl-1H-benzoimidazol-2-ylsulfanylmethyl)-benzonitrile (DJP/D139):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 4-Bromomethyl-benzonitrile (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D139) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{20}H_{18}N_4S$, M.W: 346.45, MP: 133-136$^0$C, Yield: 74%

**(10) Preparation of (5-Pyrrol-1-yl-1H-benzoimidazol-2-ylsulfanyl)-acetic acid ethyl ester (DJP/D140):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and Bromo acetic acid ethyl ester (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C

temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D140) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{15}H_{15}N_3O_2S$, M.W: 301.36, MP: 88-90$^0$C, Yield: 77%

**(11) Preparation of 1-(4-Ethyl-piperazine-1-yl)-2-(5-pyrrol-1-yl-1H-benzoimidazol-2-ylsulfanyl) ethanone (DJP/D141):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 2-Chloro-1-(4-ethyl Piperazine-1-yl)ethanone (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D141) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{19}H_{23}N_5OS$, M.W: 369.48, MP: 210-215$^0$C, Yield: 48%

**(12) Preparation of 1-Pyrrolidin-1-yl-2-(5-pyrrol-1-yl-1H-benzoimidazole-2-ylsulfanyl) ethanone (DJP/D142):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 2-Chloro-1-pyrrolidine-1-yl-ethanone (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D142) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{17}H_{18}N_4OS$, M.W: 326.42, MP: 240-244$^0$C, Yield: 53%

**(13) Preparation of N-Cyclopropyl-2-(5-pyrrol-1-yl-1H-benzoimidazole-2-ylsulfanyl) acetamide (DJP/D143):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 2-Chloro-N-cyclopropyl acetamide (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D143) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{16}H_{16}N_4OS$, M.W: 312.39, MP: s, Yield: 61%

**(14) Preparation of N-Methyl-4-(5-pyrrole-1-yl-1H-benzoimidazole-2-ylsulfanylmethyl) benzamide (DJP/D144):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 4-Bromo methyl-N-Methyl benzamide (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D144) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{20}H_{18}N_4OS$, M.W: 362.45, MP: 245-249$^0$C, Yield: 47%

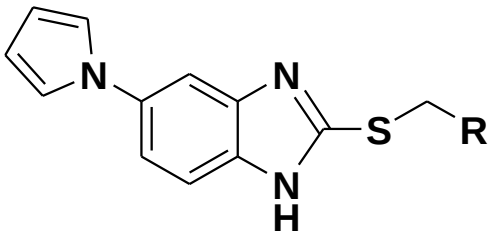
**(15) Preparation of 1-[4-(5-pyrrole-1-yl-1H-benzoimidazole-2-ylsulfanylmethyl) phenyl] ethanone (DJP/D145):**

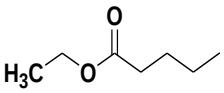
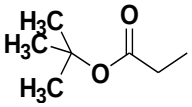
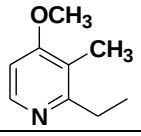
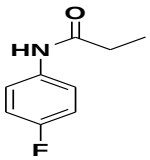
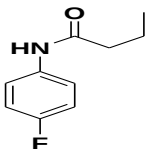
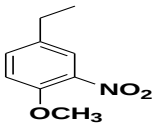
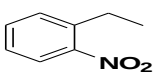
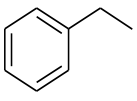
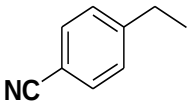
Process:

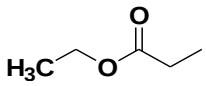
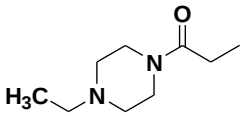
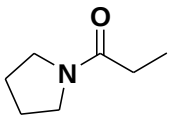
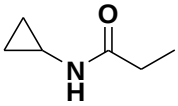
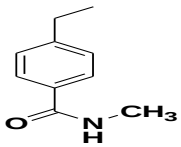
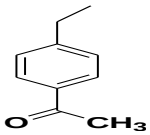
A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 1-(4-Bromo methyl-phenyl)ethanone (0.01 mol) in 20 ml of N,N-Dimethyl formamide and add potassium carbonate (0.03 mol) was heated 65-70°C temperature and stir the reaction mass for 5-6hrs. Then cool the reaction mass up to 25-30°C temperature. Then add water (40ml) and stir the reaction mass for 20 min then add Dichloromethane and stir for 15 min. then separate the lower organic layer. This organic layer dried over sodium sulphate. Then distil out solvent completely. Get crude product. This crude product was charge in round bottom flask and charge 25ml ethanol and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml ethanol to get (DJP/D145) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{20}H_{17}N_3OS$, M.W: 347.43, MP: 198-203$^0$C, Yield: 52%

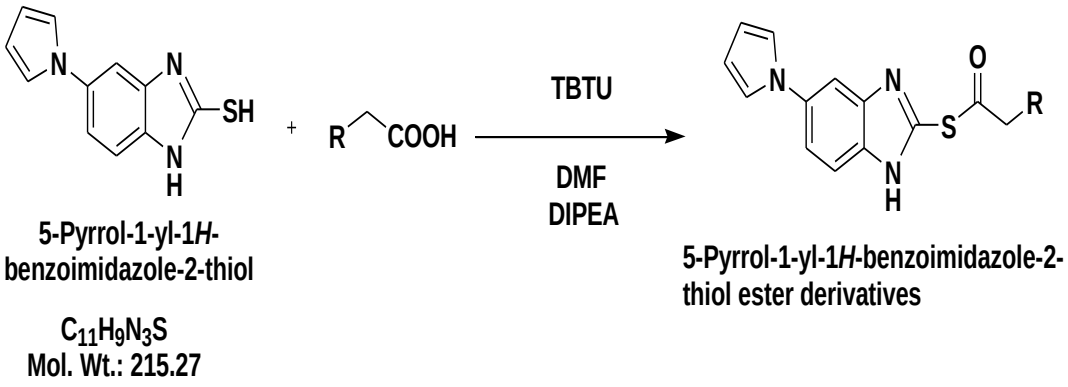
**3.[J] Table: Physical property of synthesized 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol derivatives (DJP131-145):**



| Sr No | R | Colour | M.F | M.W | M.P | %Yield |
|---|---|---|---|---|---|---|
| **DJP/D131** |  | Yellow | $C_{17}H_{19}N_3O_2S$ | 329.42 | 150-154 | 68 |
| **DJP/D132** |  | Yellow | $C_{17}H_{19}N_3O_2S$ | 313.42 | 124-126 | 72 |
| **DJP/D133** |  | Pale Yellow | $C_{19}H_{18}N_4OS$ | 350.44 | 135-138 | 71 |
| **DJP/D134** |  | Yellow | $C_{19}H_{15}FN_4OS$ | 366.41 | 175-178 | 66 |
| **DJP/D135** |  | Yellow | $C_{20}H_{17}FN_4OS$ | 380.44 | 158-160 | 80 |
| **DJP/D136** |  | Pale Yellow | $C_{19}H_{16}N_4O_3S$ | 380.42 | 124-128 | 68 |
| **DJP/D137** |  | Yellow | $C_{18}H_{14}N_4O_2S$ | 350.39 | 136-139 | 81 |
| **DJP/D138** |  | Pale Yellow | $C_{19}H_{19}N_3S$ | 321.44 | 126-125 | 62 |
| **DJP/D139** |  | Yellow | $C_{20}H_{18}N_4S$ | 346.45 | 133-136 | 74 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **DJP/D140** |  | Pale Yellow | $C_{15}H_{15}N_3O_2S$ | 301.36 | 88-90 | 77 |
| **DJP/D141** |  | Yellow | $C_{19}H_{23}N_5OS$ | 369.48 | 210-215 | 48 |
| **DJP/D142** |  | Yellow | $C_{17}H_{18}N_4OS$ | 326.42 | 240-244 | 53 |
| **DJP/D143** |  | Pale Yellow | $C_{16}H_{16}N_4OS$ | 312.39 | 222-226 | 61 |
| **DJP/D144** |  | Yellow | $C_{20}H_{18}N_4OS$ | 362.45 | 245-249 | 47 |
| **DJP/D145** |  | Yellow | $C_{17}H_{19}N_3O_2S$ | 347.43 | 150-154 | 68 |

**3.[K]. Preparation of substituted 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol ester derivatives (General Reaction Scheme)**




**5-Pyrrol-1-yl-1*H*-benzoimidazole-2-thiol**

**$C_{11}H_9N_3S$**
**Mol. Wt.: 215.27**

**5-Pyrrol-1-yl-1*H*-benzoimidazole-2-thiol ester derivatives**

**Where**

R= Different aliphatic acid substituent.

TBTU=2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate.

DIPEA=N,N-Diisopropyl ethyl amine.

DMF=N,N-Dimethyl formamide.

**(1) Preparation of Dodecanethioic acid S-(-pyrrol-1-yl-1H-benzoimidazol-2-yl) ester (DJP/D146):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and Dodecanoic acid (0.01 mol) in 20 ml of N,N-Dimethyl formamide and Cool the reaction mass up to 10-15°C temperature. Then charge 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate(TBTU) (0.015 mol) and stir the reaction mass for 15-20min. then drop wise addition of DIPEA(0.03 mol) in reaction mass at 10-15°C temperature. Stir the reaction mass for 3-4 hrs. then add water(80ml) and stir the reaction mass for 15-20 min. then add dichloromethane(25ml) and stir it. Then separate the lower organic layer, and then give 20% sodium carbonate wash of organic layer. Then dried over sodium sulphate. Then distil out completely to get crude residue. This crude product was charge in round bottom flask and charge 25ml Isopropyl alcohol (IPA) and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter

the solid product and wash with 10 ml IPA to get (DJP/D146) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{23}H_{31}N_3OS$, M.W: 397.58, MP: 268-272$^0$C, Yield: 43%

**(2) Preparation of Nonanethioic acid S-(-pyrrol-1-yl-1H-benzoimidazol-2-yl) ester (DJP/D147):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and Nonanoic acid (0.01 mol) in 20 ml of N,N-Dimethyl formamide and Cool the reaction mass up to 10-15°C temperature. Then charge 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate(TBTU) (0.015 mol) and stir the reaction mass for 15-20min. then drop wise addition of DIPEA(0.03 mol) in reaction mass at 10-15°C temperature. Stir the reaction mass for 3-4 hrs. then add water(80ml) and stir the reaction mass for 15-20 min. then add dichloromethane(25ml) and stir it. Then separate the lower organic layer, and then give 20% sodium carbonate wash of organic layer. Then dried over sodium sulphate. Then distil out completely to get crude residue. This crude product was charge in round bottom flask. Charge 25ml Isopropyl alcohol (IPA) and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml IPA to get (DJP/D147) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{20}H_{25}N_3OS$, M.W: 355.50, MP: 245-249$^0$C, Yield: 40%

**(3) Preparation of 4-Oxo-pentanethioic acid S-(5-pyrrol-1-yl-1H-benzoimidazol-2-yl) ester (DJP/D148):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 4-Oxo pentanoic acid (0.01 mol) in 20 ml of N,N-Dimethyl formamide and Cool the reaction mass up to 10-15°C temperature. Then charge 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate(TBTU) (0.015 mol) and stir the reaction mass for 15-20min. then drop wise addition of DIPEA(0.03 mol) in reaction mass at 10-15°C temperature. Stir the reaction mass for 3-4 hrs. Then add water (80ml) and stir the reaction mass for 15-20 min. then add dichloromethane (25ml) and stir it. Then separate the lower organic layer, and then give 20% sodium carbonate wash of

organic layer. Then dried over sodium sulphate. Then distil out completely to get crude residue. This crude product was charge in round bottom flask. Charge 25ml Isopropyl alcohol (IPA) and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml IPA to get (DJP/D148) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{16}H_{15}N_3O_2S$, M.W: 313.37, MP: 214-218$^0$C, Yield: 37%

**(4) Preparation of 2-Bromo-3-Methyl-thiobutyric acid S-(5-pyrrol-1-yl-1H-benzoimidazol-2-yl) ester (DJP/D149):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 2-Bromo-3-Methyl butyric acid (0.01 mol) in 20 ml of N,N-Dimethyl formamide and Cool the reaction mass up to 10-15°C temperature. Then charge 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate(TBTU) (0.015 mol) and stir the reaction mass for 15-20min. then drop wise addition of DIPEA(0.03 mol) in reaction mass at 10-15°C temperature. Stir the reaction mass for 3-4 hrs. Then add water (80ml) and stir the reaction mass for 15-20 min. then add dichloromethane (25ml) and stir it. Then separate the lower organic layer, and then give 20% sodium carbonate wash of organic layer. Then dried over sodium sulphate. Then distil out completely to get crude residue. This crude product was charge in round bottom flask. Charge 25ml Isopropyl alcohol (IPA) and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml IPA to get (DJP/D149) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{16}H_{16}BrN_3OS$, M.W: 378.29, MP:274-278$^0$C, Yield: 51%

**(5) Preparation of (2,4,5-Trifluoro phenyl) thioacetic acid S-(5-pyrrol-1-yl-1H-benzoimidazol-2-yl) ester (DJP/D150):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 2,4,5-Trifluoro phenyl acetic acid(0.01 mol) in 20 ml of N,N-Dimethyl formamide and Cool the reaction mass up to 10-15°C temperature. Then charge 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate(TBTU) (0.015 mol) and stir the reaction

mass for 15-20min. then drop wise addition of DIPEA(0.03 mol) in reaction mass at 10-15°C temperature. Stir the reaction mass for 3-4 hrs. Then add water (80ml) and stir the reaction mass for 15-20 min. then add dichloromethane (25ml) and stir it. Then separate the lower organic layer, and then give 20% sodium carbonate wash of organic layer. Then distil out completely to get crude residue. This crude product was charge in round bottom flask. Charge 25ml Isopropyl alcohol (IPA) and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml IPA to get (DJP/D150) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{19}H_{12}N_3F_3OS$, M.W: 387.38, MP: 265-269$^0$C, Yield: 58%

**(6) Preparation of 4-Methyl Pentanethioic acid S-(5-pyrrol-1-yl-1H-benzoimidazol-2-yl) ester (DJP/D151):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and 4-Methyl pentanoic acid (0.01 mol) in 20 ml of N,N-Dimethyl formamide and Cool the reaction mass up to 10-15°C temperature. Then charge 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate(TBTU) (0.015 mol) and stir the reaction mass for 15-20min. then drop wise addition of DIPEA(0.03 mol) in reaction mass at 10-15°C temperature. Stir the reaction mass for 3-4 hrs. Then add water (80ml) and stir the reaction mass for 15-20 min. then add dichloromethane (25ml) and stir it. Then separate the lower organic layer, and then give 20% sodium carbonate wash of organic layer. Then distil out completely to get crude residue. This crude product was charge in round bottom flask. Charge 25ml Isopropyl alcohol (IPA) and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml IPA to get (DJP/D151) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{17}H_{19}N_3OS$, M.W: 313.42, MP: 222-225$^0$C, Yield: 43%

**(7) Preparation of Phenyl thioacetic acid S-(5-pyrrol-1-yl-1H-benzoimidazol-2-yl) ester (DJP/D152):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and Phenyl acetic acid(0.01 mol) in 20 ml of N,N-Dimethyl formamide and Cool the reaction

mass up to 10-15°C temperature. Then charge 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate(TBTU) (0.015 mol) and stir the reaction mass for 15-20min. then drop wise addition of DIPEA(0.03 mol) in reaction mass at 10-15°C temperature. Stir the reaction mass for 3-4 hrs. Then add water (80ml) and stir the reaction mass for 15-20 min. then add dichloromethane (25ml) and stir it. Then separate the lower organic layer, and then give 20% sodium carbonate wash of organic layer. Then distil out completely to get crude residue. This crude product was charge in round bottom flask. Charge 25ml Isopropyl alcohol (IPA) and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml IPA to get (DJP/D152) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{19}H_{15}N_3OS$, M.W: 333.41, MP: 208-211$^0$C, Yield: 64%

**(8) Preparation of Chloro thioacetic acid S-(5-pyrrol-1-yl-1H-benzoimidazol-2-yl) ester (DJP/D153):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and Chloro acetic acid(0.01 mol) in 20 ml of N,N-Dimethyl formamide and Cool the reaction mass up to 10-15°C temperature. Then charge 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate(TBTU) (0.015 mol) and stir the reaction mass for 15-20min. then drop wise addition of DIPEA(0.03 mol) in reaction mass at 10-15°C temperature. Stir the reaction mass for 3-4 hrs. Then add water (80ml) and stir the reaction mass for 15-20 min. then add dichloromethane (25ml) and stir it. Then separate the lower organic layer, and then give 20% sodium carbonate wash of organic layer. Then distil out completely to get crude residue. This crude product was charge in round bottom flask. Charge 25ml Isopropyl alcohol (IPA) and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml IPA to get (DJP/D153) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{13}H_{10}ClN_3OS$, M.W:291.76, MP: 185-188$^0$C, Yield: 46%

**(9) Preparation of Pentanethioic acid S-(5-pyrrol-1-yl-1H-benzoimidazol-2-yl) ester (DJP/D154):**

Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and Pentanoic acid(0.01 mol) in 20 ml of N,N-Dimethyl formamide and Cool the reaction mass up to 10-15°C temperature. Then charge 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate(TBTU) (0.015 mol) and stir the reaction mass for 15-20min. then drop wise addition of DIPEA(0.03 mol) in reaction mass at 10-15°C temperature. Stir the reaction mass for 3-4 hrs. Then add water (80ml) and stir the reaction mass for 15-20 min. then add dichloromethane (25ml) and stir it. Then separate the lower organic layer, and then give 20% sodium carbonate wash of organic layer. Then dried over sodium sulphate. Then distil out completely to get crude residue. This crude product was charge in round bottom flask. Charge 25ml Isopropyl alcohol (IPA) and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml IPA to get (DJP/D154) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{16}H_{17}N_3OS$, M.W: 299.39, MP: 195-198$^0$C, Yield: 43%

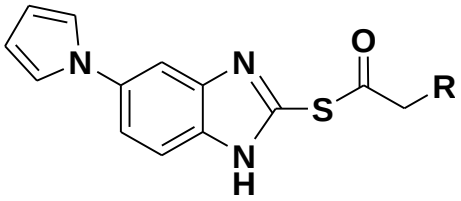
**(10) Preparation of Thoipropionic acid S-(5-pyrrol-1-yl-1H-benzoimidazol-2-yl) ester (DJP/D155):**

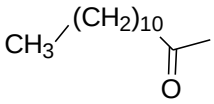
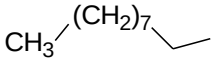
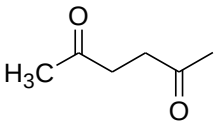
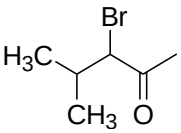
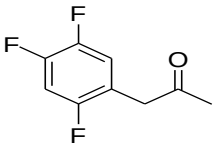
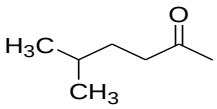
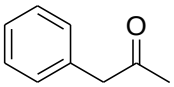
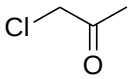
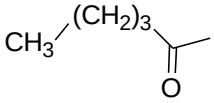
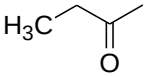
Process:

A mixture of 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol (0.01 mol) and Propionic acid(0.01 mol) in 20 ml of N,N-Dimethyl formamide and Cool the reaction mass up to 10-15°C temperature. Then charge 2-(1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium tetrafluoroborate(TBTU) (0.015 mol) and stir the reaction mass for 15-20min. then drop wise addition of DIPEA(0.03 mol) in reaction mass at 10-15°C temperature. Stir the reaction mass for 3-4 hrs. Then add water (80ml) and stir the reaction mass for 15-20 min. then add dichloromethane (25ml) and stir it. Then separate the lower organic layer, and then give 20% sodium carbonate wash of organic layer. Then distil out completely to get crude residue. This crude product was charge in round bottom flask. Charge 25ml Isopropyl alcohol (IPA) and heat the reaction mass up to 65-70°C temperature. Then cool the reaction mass up to 10-15°C temperature. Then stir for 30-40 min. then filter the solid product and wash with 10 ml IPA to get (DJP/D155) and dry the material at 50-55°C.

Colour: Pale yellow, M.F: $C_{14}H_{13}N_3OS$, M.W: 271.34, MP: 164-167$^0$C, Yield: 49%

**3.[L] Table: Physical property of synthesized 5-Pyrrol-1-yl-1H-benzoimidazole-2-thiol ester derivatives (DJP146-155):**




| Sr No | R | Colour | M.F | M.W | M.P | %Yield |
|---|---|---|---|---|---|---|
| **DJP/D146** |  | Yellow | $C_{23}H_{31}N_3OS$ | 397.58 | 268-272 | 43 |
| **DJP/D147** |  | Yellow | $C_{20}H_{25}N_3OS$ | 355.50 | 245-249 | 40 |
| **DJP/D148** |  | Pale Yellow | $C_{16}H_{15}N_3O_2S$ | 313.37 | 214-218 | 37 |
| **DJP/D149** |  | Yellow | $C_{16}H_{16}BrN_3OS$ | 378.29 | 274-278 | 51 |
| **DJP/D150** |  | Yellow | $C_{19}H_{12}N_3F_3OS$ | 387.38 | 265-269 | 58 |
| **DJP/D151** |  | Pale Yellow | $C_{17}H_{19}N_3OS$ | 313.42 | 222-225 | 43 |
| **DJP/D152** |  | Yellow | $C_{19}H_{15}N_3OS$ | 333.41 | 208-211 | 64 |
| **DJP/D153** |  | Pale Yellow | $C_{13}H_{10}ClN_3OS$ | 291.76 | 185-188 | 46 |
| **DJP/D154** |  | Yellow | $C_{16}H_{17}N_3OS$ | 299.39 | 195-198 | 43 |
| **DJP/D155** |  | Pale Yellow | $C_{14}H_{13}N_3OS$ | 271.34 | 164-167 | 49 |

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