3. PRESENT WORK

Various approaches for the synthesis of benzimidazoles continue to utilize the condensation reactions of o-phenylenediamine with carboxylic acids, esters, lactones, anhydrides and aldehydes. These reactions require harsh dehydration conditions such as strong mineral acids, which have limited viability of many starting materials. We envisioned the ethylenegycol as solvent for the synthesis of oleo-benzimidazole derivatives by the reaction of o-phenylenediamine with fatty acids using easily available precursors with considerably with good yields can enhance this chemistry and expand the chemistry scope.

Benzimidazole is a versatile core contained in several substances possessing a broad spectrum of pharmacological activity. In particular, it has been an important pharmacophore and privileged structure in medicinal chemistry, encompassing a diverse range of biological activities including antiarrhythmic, HIV-RT inhibitor, anticancer, pesticide, antiulcer, anthelmintical, inotropic, antihistamin, antifungal, antibacterial, antiviral and cytotoxicity. Therefore, preparation of benzimidazole has attracted considerable attention in recent years.

Initial efforts focused on optimizing solvent conditions for the synthesis of 2-alkyl substituted oleo-benzimidazoles employing ethylene glycol. The cyclocondensation reaction is carried out between o-phenylenediamine and 4-substituted o-phenylenediamines with unusual fatty
acids under ethylene glycol as a solvent and successfully generated desired 2-alkyl substituted oleo-benzimidazole derivative. Our preliminary success prompted an evaluation of the reaction scope aimed at achieving the ultimate goal of applying this solvent system for the synthesis of novel 2-alkyl substituted oleo-benzimidazole derivatives. The elemental analysis, yield and melting points are given Table 1. The melting points were determined by open capillary method and are uncorrected. These novel oleo-benzimidazoles have been studied and characterized by FTIR, $^1$H NMR, and $^{13}$C NMR spectrophotometer.

Scheme - 1

![Scheme 1](image)

Where, $R = a$)-H, $b$)-Br, $c$)-NO2

$R' = (a') - \text{(CH}_2\text{)}_7\text{-CHOH-CHOH-(CH}_2\text{)}_5\text{-CH}_2\text{OH}$

$(b') - \text{(CH}_2\text{)}_7\text{-CH=CH-(CH}_2\text{)}_5\text{-CH}_2\text{OH}$

$(c') - \text{(CH}_2\text{)}_7\text{-CH=CH-(CH}_2\text{)}_7\text{-CH}_3$

$(d') - \text{(CH}_2\text{)}_8\text{-CH=CH}_2$