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OVERVIEW ON EVALUATION ON SYNTHESIS OF 6- BROMO 2-AMINOBENZOTHIAZOLE

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Abstract:-

Reaction was carried out using bromoaniline to derivative of 2 aminobenzothaizole.Using potassium thiocyanid and the solution of bromine in pure weak acid.To give and heterocyclic compound .Whose derivative has many medical improtance. And also improtant intermidiate for azo compound

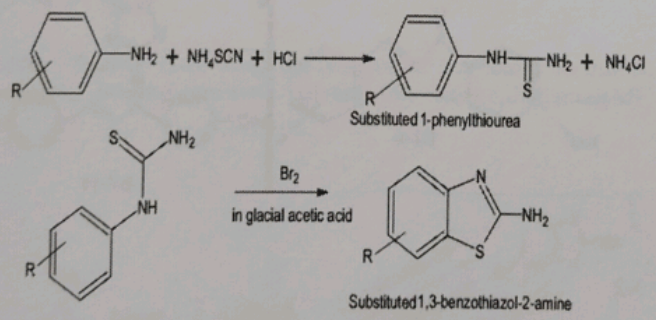
Keywords:- *Acetic acid galcial, p Bromoaniline , 2 aminobezothaizole,NaOH*

Introduction :-

Currently research in many field are incresing a lot . And all have some bad and good effect on our life . Today many people are facing health issuse as a result the demand for the drugs which have long term effect on and cure diseases within sort period of time is increasing and many researcher are working on it to. One of the compound that is 2 aminobenzothaizole is an interesting subject to work on due to its pharmaceutical effect .Its derivative to have an importance in the azo industry too(4).6- bromo 2aminobenzothiazole and other derivative's have antidotal effect . It to have anti chimerism. Used as Diauretic agentAnxiolytic agent(10) fighting capacity against nerological disorder(6) against Huntington's diseases(10),anti inflammatory property(1)anti diabetic property(2), and also show anti microbial activityand many more. One can find its importance in other health issuse to which are been cose by viruse , protozol , fungal, paracitic and many more. In all derivative's is very much important on the point of view of drug industry .Applicable in PET probe which is use for screeningAD(7) the derivative of 2 amino benzothiazole is also use to cure HIV(7, 10)Fight against estrogen diseases, used against American type culture collection strain of Staphylococcus aureus ,Enterococcus faecalis,and Escherichia coli(7) Derivative of 6bromo2 amino benzothiazole is used against SKRB-3 human breast cancer cell ,SW620 colon cancer cell, HepG2hepatic carcinoma cell . (7).

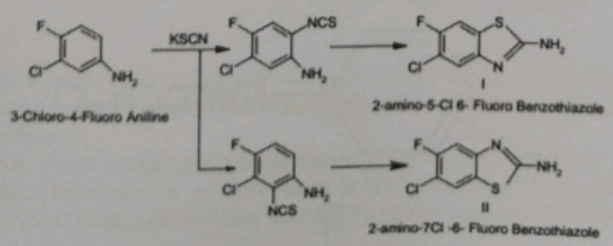
Discussion and synthesis:-

P. Venkatesh and assosiate used Substituted aromatic amine in presence of ammonium thiocyanate was converted into substituted 1 phenythiourea in HCL (acidic medium) which was the cyclizedto the derivative of 2aminobezothiazole in presence of bromine solution and has an good yeild ofabout 65-85%. Use of lamda- carrageenan induced mice paw edema method is been used for detection of anti inflammatory activity.(1) IR , melting point, uv , H1 nmr pradicated for different derivatives provided(1).

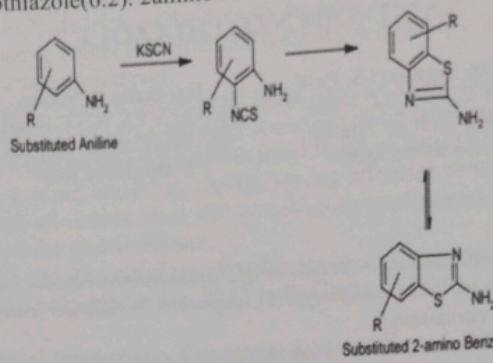


R=H ,R=5Cl ,R=6Cl,R=5No2 ,R=6No2,R=6Br

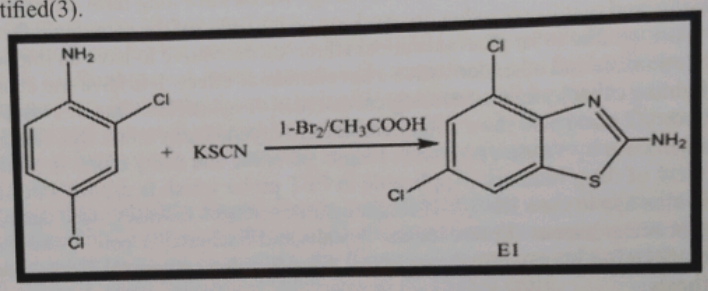
Jitender k malik and co worker produced review o for synthesis of pharmacological profile compound of 2 amino benzothaizole(6).synthesis substituted 2aminobenzothiazole(6.1). 2amino 5-Cl-6-fluoro bezothiazole(6.2). 2amino -7Cl-6fluoro benzothaizole(6.3). 2aminobenzothaizole(6.4)



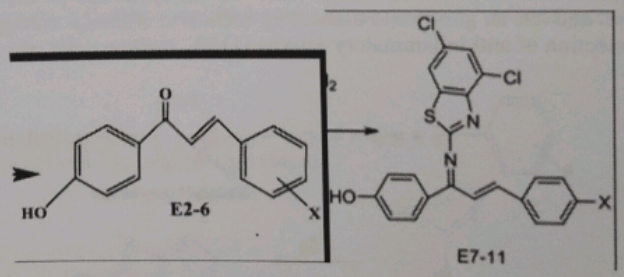
. 2amino 5-Cl-6-fluoro bezothiazole(6.2). 2amino -7Cl-6fluoro benzothaizole(6.3)



Enan, jassim et .al. reported production of the 4,6-dicholoro2 aminobezothaizolefrom 4,6 dichloroaniline with KSCN. Synthesis of chalcone(3.2)-4-1(4,6 dicholorobenzothaizole-2-E1amino)3phenylaryl)phenol(3.3) grampositive and negative biological activity are justified(3).

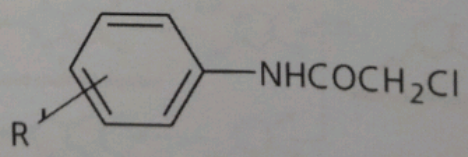


3.1

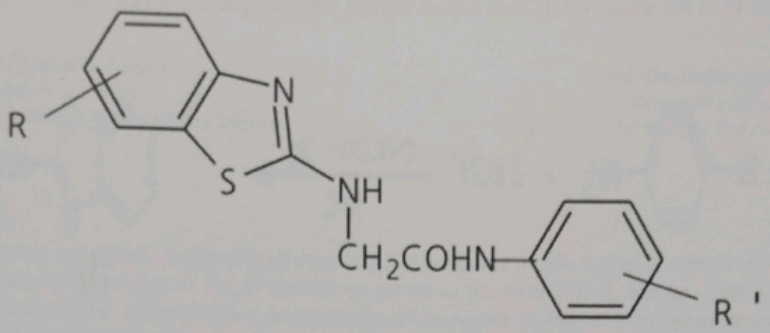


3.2 3.3

U.S.Thube and coworker, bromo and chloro substituent of 2 amino benzothiazole favarable for diabetes.aniline with NH4KCN in ethanol in present ofconc. HCL. Later with conc. H2SO4 refluxed led to substituent product(2.1) . substituted chloroacetaniline (2.2) sub. 2 amino benzothiazole and sub. Chloroacetaniline in dry 1,4 dioxane in present of triethylamine2 sub.

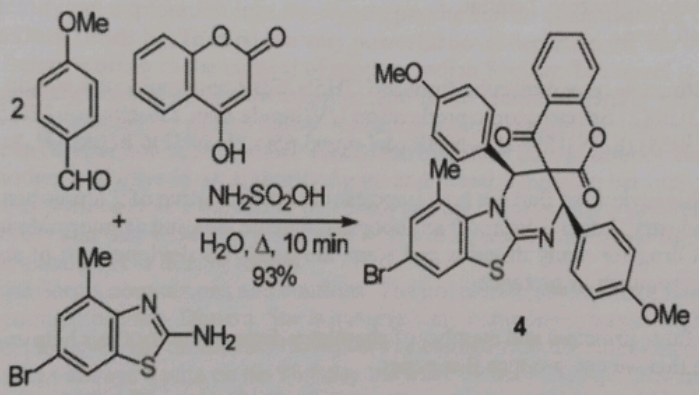


2.1

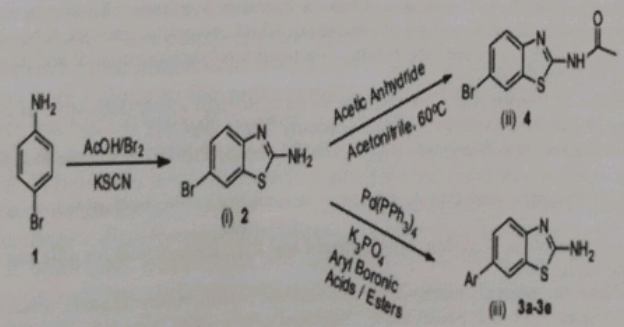


2.2

Review by Larisa v. et al give synthesis mechanisum under the concept of green synthesis for some biologically active derivatives of 2 aminobenzothaizole(5)



Yasmeen Gull and co worker , Suzuki cross coupling reaction of 2 amino 6 bromobenzothiazole with various aryl bronic acids and ester under optimized heating contition . solvents like toluene,dioxane,DMF, with H2O in 4:1



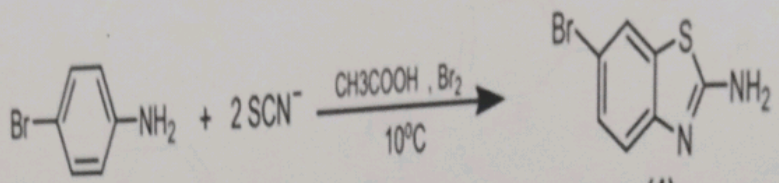
Material And Method :-

6 bromo aniline , glacial aetic acid , bromine solution in acetic acid , cold water , conc. NaOH, KSCN, with ir spectra detector , B.P apparatus , uv spectra detector , fusion test chemicals (feso4 solution ,conc.hcl, AgNO3 solution etc.)

General method for preparation :-

(0.050 mol) 6 bromo aniline , (0.10) mole of potasium thiocyanate dissolve in 140 ml acetic acid and the mixture was the maintain to temp below 10oC . bromine 2.4 ml was taken in 20 ml acetic acid to make the solution of it .It was also made to stand at temp. of below 10oC then this solution was added to the mixature of aniline drop wise with continuouse

stirring during this addition to temp was maintain .after addtion the solution was made to stand for few min then the 20 ml of cold water was added . then the conc NaOH was added till ppt was completely form. Then it was recrystalized either by water or ethanol .



(1)

Application :-

2 amino 6bromobenzothiazole is used for:-

1) 2 amino- 6- arylbenzothiazole compound
2) 6-p-tolybenzo[d]thiazole-2-amine
3) 6-(4chlorophenyl)benzo[d]thiazole-2amine
4) 6-(4meythoxyphenyl)benzol[d]thaiozole -2amine
5) 6-(3,5- bis(triflouromethyl)phenyl)benzothiazole-2amine
6) 6-phenylbezothiazo[d]thiazole-2-amine
7) synthesis of schiff base

Result :-

6Bromo 2aminobenzothiazole have molecular formula C7H5N2SBR with molecular weight 229.09 with m.p201-203oc, yeild 87.1 ,Rf value for tlc 0.68(2).Spectroscopic predication UV(lamda max) in ethanol 276.5mm,IR(lamda max){KBr/ cm-1} NH(3325) ,Ar=C-H(3034),(C=N)1595 H1 –NMR (del-ppm3.65(s,2H,NH2)6.81(dd,1H,Ar ortho-H to Br J=4.6 hz)[1].

Conclusion :-

During prodution of this review we find out how improtant is the derivative of 2 aminobenzothiazole on point of view of drug producer and azo industry .Infact 6 bromo 2 aminobenzothiazole are used as intermideate for many other derivative of it which are nothing but drug for many diseases and some are used for devlopement of some azo product hence this heterocyclic compound is very much improtance.

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Reference :-

1) P.Venkatesh ,S.N.Padeya Synthesis , characterisation and anti –inflammatory activity of some 2-amino benzothiazole derivatives KMCH college Coimbatore , saroj institute lucknow 2009, :1354-1358
2) U.S.Thube, P.Y.Pawar,R.L.Sawant Synthesis and antidiabetic evaluation of some 2-substituted benzothiazole derivatives Dr.V.V.P.F's college , Ahmednagar 2021
3) Enas, Jassim .Al- jubory, Khalid,A.Al-Badrany, Omar A.kanoush Synthesis of some new 4,6 – dichloro2- aminobenzothiazole compensators with experted biological college of education ,Tikrit university, Iraq4)N.A.Naser, K.H.Kahdim and D.N.Taha Snthesis and characterization of an organic reagent 4-(6-bromo-2-benzothiazolyazo)pyrogallol and its analytical applicationuniversity of Kufa and university of Babylon 2012 :387-392
5) Larisa V.Zhilitskaya,Nina O.Yarosh A review : Synthesis of biological active derivative of 2-aminobenzothiazole Favorsky Irkutsk insititute of chemistry , Siberian branch of Russian academy 2021, :369-373
6) Jitendra K Malik ,F.V.Manvi, B.K.Nanjwade,Sanjiv Singh ,Pankaj Purohit A review K.L.E.S's college pharmacy ,Belgaum2010 :347-359
7) Maged Henary, Shirish Paranjpe and eric A. owens A review:Substitute benzothiazole :synthesis and medicinal characteristics 2013;19(2) :89-99
8) D.K.jangid , A.Guleria ,S.Dhadda, K.yadav,P.G.Goswami and C.L. Khandelwal An efficient synthesis of 2 aminobenzothaizole and its derivatives in ionic liquid 2017
9) Yasmeen Gull ,Nasir Rasool , Mnaza Noreen ,Faiz –ul-Hassun Nasim, Asma Yaqoob, Shazia Kousar ,Umer Rashid,Iftikhar Hussin Bukhari,Muhammad Zubair And Md. Saiful Islam .Efficient synthesis of 2 amino – 6 – aryl benzothiazoles via Pd(0) suzuki cross coupling reaction ;potent urease enzyme inhibitor and nitric oxide scavenging activity of product 2013: 8845-8857
10) Prabodh Chander Sharma ,Alka Sinhmar, Archana Sharma , Harish Rajak and Dharam Pal Pathak : Medicinal significance of benzothiazole scaffold :an insigh view, Journal of enzyme inhibitor and medical chemistry 2012: 240-266
11) S Jone Kirubavathy , R. Velmurugan, R. Karvembu, N.S.P.. Bhuvanesh , I V M V Enoch , P Mosae and S Chitra Co(II) complex of 2 – amino – 6- methylbenzothiazole : synthesis , structure and biological evaluation 2016 : 1297-1304
12) Sinem Ilgam , Derya Osmaniya , Serkan Levent, Begum Nurpelin Saglik , Ulviye Acar Cevik, Betul Kaya Cavusoglu , Yusuf Ozkay and Zafer Asim Kaplancikh:Design and synthesis of new benzothiazole compound as selective hMAO-B inhibitors 2017
13) Hala M. Refat and Khaled S.Mohamed : efficient and convenient synthesis of pyrido {2,1-b] benzothiazole , pyrimidopyrido [2,1-b] benzothiazole and benzothiazolo [3,2-a] [1,8] naphthyridine derivative 2015 :219-224