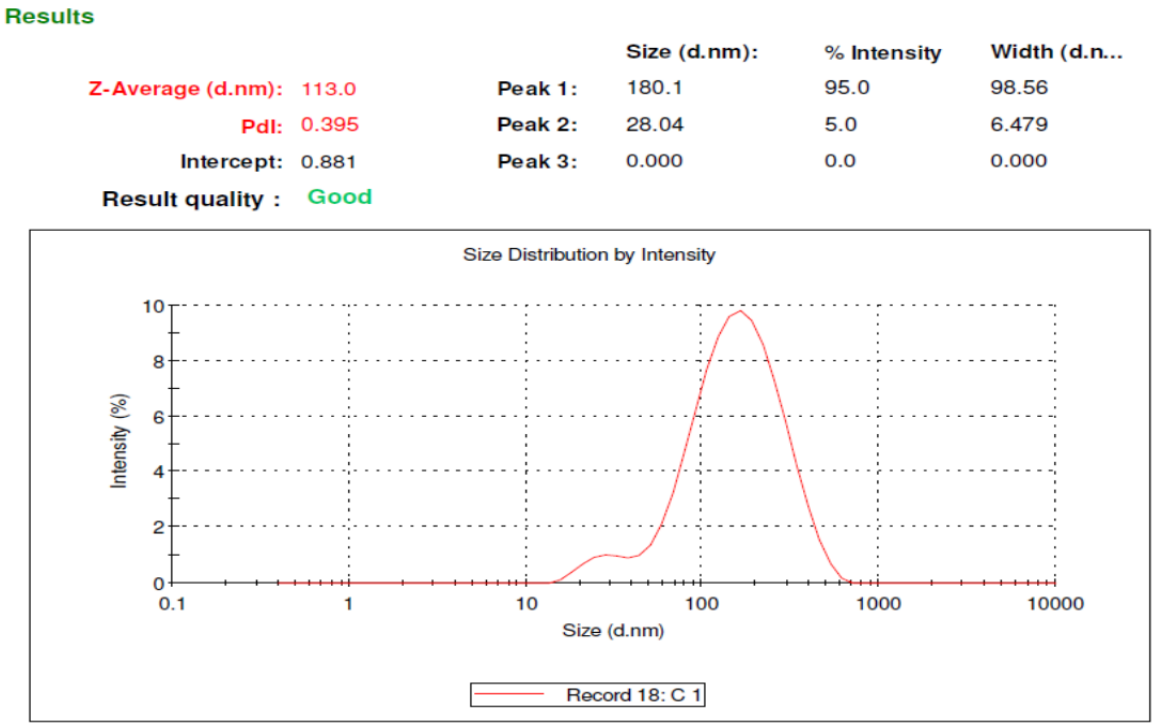

Figure 7: Particle size analysis of the *Campylopus flexuosus* mediated synthesized silver nanoparticles

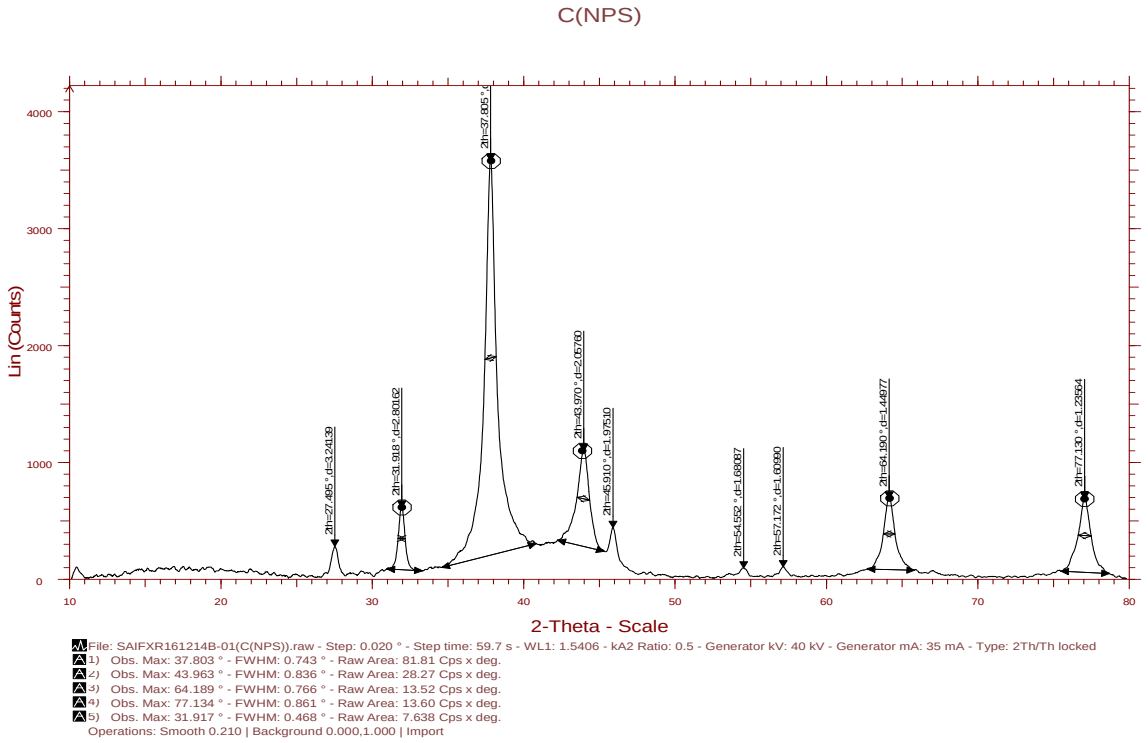

Figure 8: XRD analysis silver nanoparticles synthesized from *Campylopus flexuosus*

Pos. [°2Th.]	FWHM Left [°2Th.]	d-spacing [Å]	Particle size
37.803	0.743	2.37813	11.8
43.963	0.836	2.05760	10.7
64.189	0.766	1.44977	12.7
77.134	0.861	1.23564	12.3
31.917	0.468	2.80162	18.4

Table 1: Determination of crystalline size of AgNP's by using Debye-Scherrer's equation

DISCUSSION

Currently many approaches have been used to synthesize the silver nanoparticles in simple and easy methods. It includes both chemical and biological methods. Nowadays the nanoparticle synthesize using plants were attracted by many researchers (Kesarala Mohan Kumar, 2012)[11]. Thereby the greener synthesis process is (i.e synthesis of silver nanoparticles using plants) is easy and eco friendly method and also cost effective (Abduz Zahir A et.al., 2012)[12]. In the present study the moss (Bryophyte) plant is mediated to synthesize the silver nanoparticles. Addition of silver nitrate with the plant extract exhibit a colour change of yellow to reddish brown with a particular duration of incubation time. This is the preliminary confirmation of silver nanoparticle. The same result was obtained in the moss plant *Fissidens minutus* (Srivastava A.A et.al., 2011) [8]. Silver nitrate dissolved in water turned into silver free ions Ag+ to Ag0. By adding the plant extract to silver nitrate, the free silver ions gets the electron moiety and it will form into elemental silver (Fu M et.al., 2006) [13]. Formation of reddish brown colour is due to the surface plasmon resonance (Sathyavathi R et.al., 2010) [14].The absorption maxima in UV-Vis is at 436nm, very similar result were obtained in *Anthoceros* mediated AgNps where λ max is at 438nm(Kulkarni A.P et.al., 2012) [7]. FTIR analysis revealed the presence of carbonyl compounds acted as a capping agent to synthesize the AgNps. The same result were reported in the aqueous extract of *Amaranthus dubius* AgNps (Jannathul Firdhouse et.al., 2012)[15]. FESEM analysis showed the 50 to 70nm in the CfAgNps. The result were accordance with *Bacillus* AgNps (Vithiya K et.al., 2014) [16]. Elemental analysis showed the quantity of silver is followed by C, Cl, O and Si the result obtained by (Ibrahim HMM, 2015)[17] The zeta potential value showed for CFAgNps the negative repulsion the similar result were corroborated with *Urtica dioica* synthesized AgNps (Kumari Jyoti 2016) [18]. Particle size distribution revealed the 113nm average size particles the similar results were obtained in the *Ficus carica* (Hemant P et.al., 2013) [19]. XRD pattern determined the average particle size is 51nm same results were matched with *Argemone mexicana* AgNps 20nm size ranges from 10 to 50nm (Singh A et al., 2010)[20].

CONCLUSION:

The plant mediated synthesized metallic nanoparticles have a high impact in the field of bio nanotechnology, but work in green synthesis by bryophytes is very meagre. Hence the present investigation aims on synthesis and characterization of silver nanoparticles from the moss (bryophyte) plant *Campylopus flexuosus*. Colour change is the primary confirmation of silver nanoparticle formation. Characterization studies were carried out by UV-Vis, FTIR, FESEM, EDAX, Zeta potential, Particle size and XRD. Maximum absorption in UV-Vis is at 436nm confirmed the synthesis. Carbonyl compounds of protein binds to the surface of the metal so these act as a capping agent confirmed by the FTIR spectrum. Average particle is 50-70nm is determined by FESEM and XRD analysis. Overall results clearly exhibited the nanoparticles was successfully synthesized. Thus the present investigation proved that the moss plant *Campylopus flexuosus* moss plant has the potential to fabricate the nanoparticles.

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