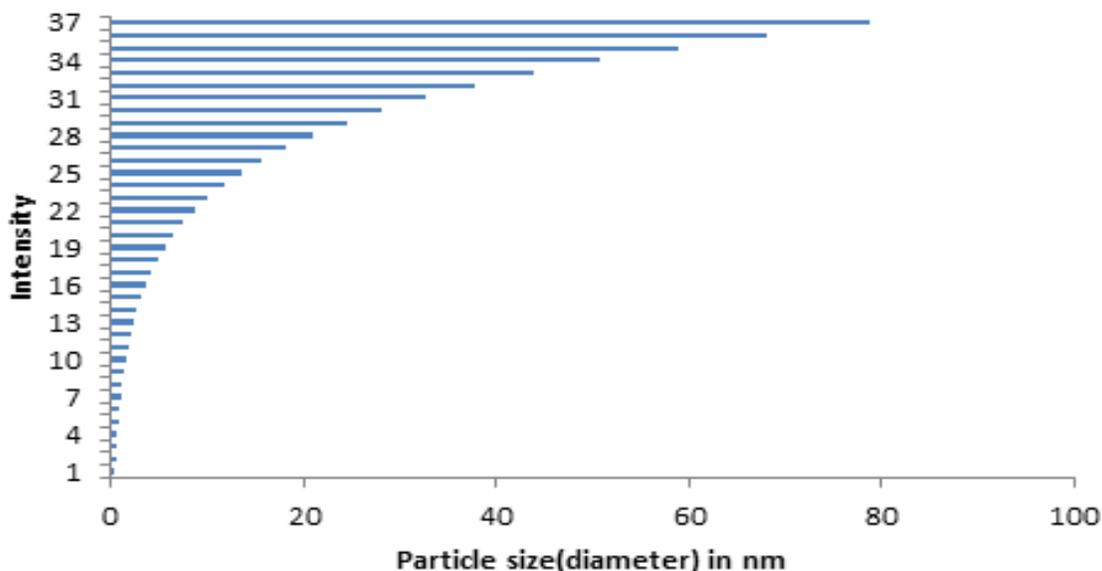


**Nano reduction of  $\beta$ -glucan and its utilization as nano-carrier for sustainable release of  $\alpha$ -tocopherol**

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**Abstract:** Barley  $\beta$ -glucan nanoparticles were prepared using emulsion method. The average size of nanoparticle as determined by DLS was found to be in the range of 65-78 nm (Fig. 1). Fourier transform infrared (FTIR) spectroscopy confirmed exposure of the -OH group and other functional groups of  $\beta$ -glucan nanoparticles (Fig. 2). Scanning electron microscopy of nanoparticles revealed less dense structure with more porosity. Antioxidant properties of  $\beta$ -glucan nanoparticles were found to be higher comparatively than macro  $\beta$ -glucan. The study confirmed the decrease in water absorption capacity of nanoparticles which makes it efficient for encapsulating process. It was found that there was a considerable decrease in swelling power due to the reduction of the size which in-turn reduces the water retention capacity. From the present study it can be concluded that size reduction also decreased viscosity and increased solubility which reflects its use as a food ingredient where viscosity and solubility is the main problem. Besides, the encapsulation efficiency (%) of nano  $\beta$ -glucan was found much higher than macro  $\beta$ -glucan. Further, the study revealed the improved in-vitro release of  $\alpha$ -tocopherol from nano  $\beta$ -glucan compared to macro  $\beta$ -glucan thereby enhancing its application as wall material for various bioactive ingredients.

Figure 1: DLS graph of Nano  $\beta$ -glucan.

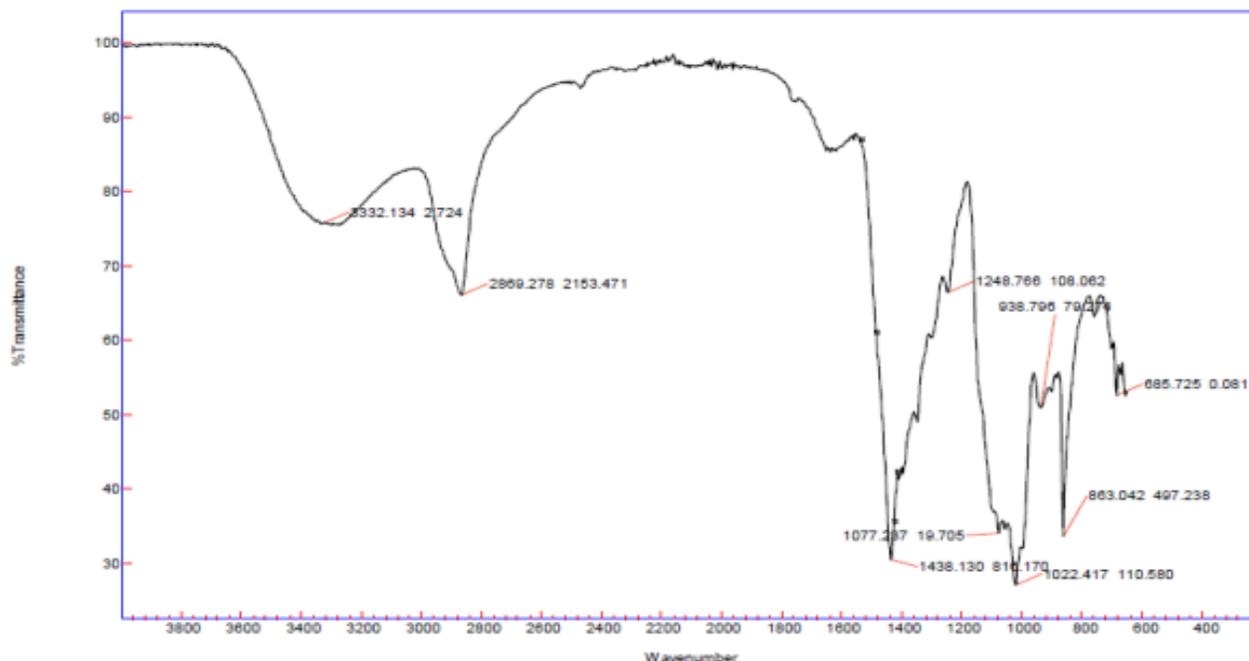


Fig. 2 FTIR of Nano  $\beta$ -glucan.

**Biography:** Dr. Asima Shah completed her M. Sc. degree (2011) and Ph.D. (2017) in Food Technology from University of Kashmir, Jammu and Kashmir, India. Presently she is working as INSPIRE Faculty in the department of Food Science & Technology, University of Kashmir, Jammu and Kashmir. Her research interests include characterization of polysaccharides like starch,  $\beta$ -glucan, and pentosans, development of resistant starch, encapsulation and targeted delivery of bioactives, and development of active biodegradable packaging films.