conferenceseries.com

Joint Meet on 29th International Conference on Nanomedicine and Nanomaterials & 24th World Nanotechnology Congress

April 26, 2021 | Webinar

Synthesis and characterization of nano-micellar formulation of polyphenolic fraction of thymus vulgaris L and its anticancer effects

Beyza Sumeyye Aydin¹, Aysenur Bezelya², Ipek Ibicioglu², Yasin Celikok ³, Fatemeh Bahadori⁴, Isil Albeniz⁵

¹Department of Biotechnology, Institute of Health Sciences, Bezmialem Vakif University, Fatih, Istanbul 34093, Turkey

²Faculty of Pharmacy, Bezmialem Vakif University, Fatih, Istanbul 34093, Turkey

³Department of Biophysics, Institute of Health Sciences, Istanbul University, Istanbul 34390, Turkey

⁴Department of Pharmaceutical Biotechnology, Faculty of Pharmacy, Bezmialem Vakif University, Fatih, Istanbul 34093, Turkey

⁵Department of Biophysics, Faculty of Medicine, Istanbul University, 34390 Istanbul, Turkey

Abstract: Incorporation of nano drug delivery systems with herbal extracts is a promising research area which provides possibility of obtaining high efficacy with low dose of natural therapeutics. In this aspect we prepared the nano-micellar formulation of the polyphenolic fraction of *Thymus vulgaris L*. (ThV) using poly(lactic-co-glycolic) acid (PLGA). ThV is very well known for its anticancer activity. Phenolic compounds are able to scavenge free radicals and show antioxidant activity. However, in cancer cell where the accumulation of Fe⁺² ions are higher than healthy tissue, this anti-oxidant activity transforms to pro-oxidant activity via the Fenton Reaction. Pro-oxidation induces cancer cell death and this point is where the anti-cancer activity of natural products could be discussed. Thus it is possible to obtain pro-oxidant activity with low doses of plant extracts using their nano-formulations. For this purpose petroleum ether (P.E.) extract of ThV was obtained in order to remove the non-polar and non-phenolic seconder metabolites along with the chlorophyll derivatives. Following P.E. extraction the plant material was further extracted using Acetonitrile (AcN) in room temperature to obtain an extract rich in phenolic components. ThV_{AcN} extract was vacuum dried. Different amounts of the obtained extract (5-20 mg) was dissolved in acetone along with 50 mg PLGA and drop wisely added on 20 ml of aqueous media containing %0.05 Tween 80. Acetone was evaporated in R.T. and the obtained PLGA-ThVAcN nano formulations with the size of 175nm showed increased anti-cancer efficacy against MCF-7 breast cancer cell lines compared to free ThV_{AcN} dissolved in DMSO.

beyza_sumeyye@hotmail.com

Notes: