

Abstract

# Effect of a Synthesized Compound against Cancerous Cell Line and Synthesis of Copper Ion Incorporated 1-(3,4-Diaminophenyl) Ethanone-Based Hybrid Nanoflowers <sup>†</sup>

Burcu Somtürk Yılmaz \*, Senem Akkoç and Nalan Özdemir

Department of Chemistry, Faculty of Sciences, Erciyes University, Talas Street, 38039 Kayseri, Turkey; ozdemirn@erciyes.edu.tr (S.A.); senemakkoc@erciyes.edu.tr (N.Ö.)

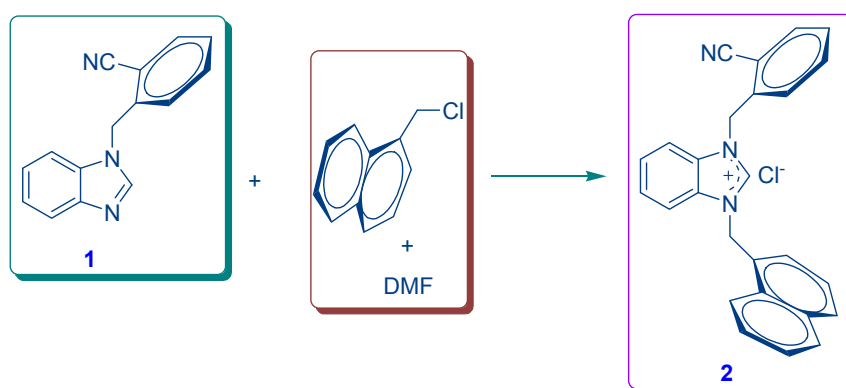
\* Correspondence: bsomtirk@erciyes.edu.tr; Tel.: +90-352-437-52-62

<sup>†</sup> Presented at the 2nd International Conference on Natural Products for Cancer Prevention and Therapy, Kayseri, Turkey, 8–11 November 2017.

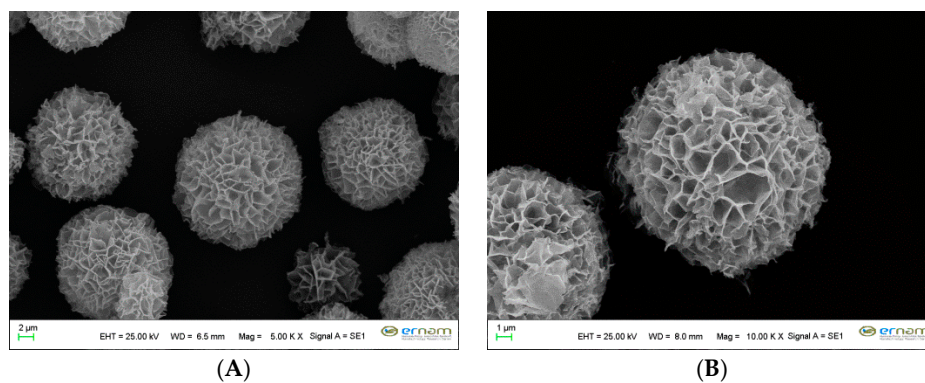
Published: 15 November 2017

**Keywords:** salt; colon and breast cancers; cytotoxic activity; nanoflower; catalytic activity; stability

Cancer is a very common disease between men and women in worldwide. Although many studies have been conducted to find effective anticancer drugs by researchers, this disease is not completely exterminated. 2-Nitrilebenzyl substituted benzimidazolium salt was obtained in moderate yield (Scheme 1). The cytotoxic effect of the synthesized ligand were tested against two human cancer cell lines and one non-cancerous cell line. According to obtained results; compound 2 have anticancer effect. Furthermore; we conducted a study on the formation; catalytic activity and stability of hybrid nanoflowers (hNFs) containing benzimidazolium salt and copper ions. The synthesis of hNFs was accomplished using a modified method. In all activity measurement experiments; the hNFs and an identical concentration of free benzimidazolium salt was used. The activities of hNFs were determined by colorimetric and spectroscopic methods using guaiacol as a chromogenic substrate. The hNFs were characterized using SEM, EDX, FT-IR analysis, Bradford assay, UV-Vis spectrometry and XRD. The effect of reaction temperatures on the morphology of the hNFs is demonstrated with SEM images (Figure 1).



**Scheme 1.** Synthesis of salt 2 from 2-((1H-benzo[d]imidazol-1-yl)methyl)benzonitrile with 1-(chloromethyl)naphthalene.



**Figure 1.** SEM images of hNFs synthesized at different incubation temperatures (A) +4 °C, (B) room temperature.



© 2017 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).