DESIGN AND SYNTHESIS OF QUINAZOLINONE-AURONE HYBRIDS

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ABSTRACT

Quinazolinones are an interesting class of nitrogen heterocycles which possess a wide range of biological and pharmaceutical activities like anticancer, antimicrobial, anti-inflammatory [1,2]. Natural and synthetic aurones have been shown so far to possess a broad spectrum of bioactivity including anticancer, antioxidant, antiparasitic and neuroprotective [3]. Taken together, our study is based on designing some new hybrids compounds with the previously mentioned features. Hybrids are based on the principle of combining two or more pharmacophore moieties in one chemical scaffold in order to create new and possibly more active molecular entities.

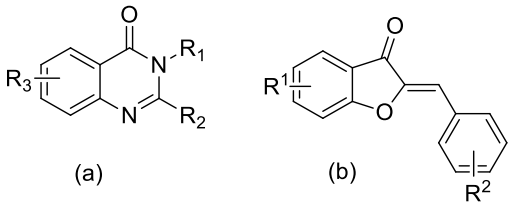

Figure 1: General structures of 2,3-substituted quinazolin-4(3H)-ones and aurones

In the first part of our study, the synthesis of 2,3-substituted quinazolin-4-(3H)-ones analogues [Figure 1, (a)] was accomplished through a two-step methodology starting from anthranilic acids, using Microwave Assisted Organic Synthesis (MAOS) or conventional heating. In the second part, we synthesized a series of suitably substituted aurone analogues [Figure 1, (b)] via the oxidative cyclization of the corresponding chalcones using mercury (II) acetate in pyridine. The structural characterization of the synthesized compounds was achieved using ^{1}H and ^{13}C NMR spectroscopy as well as MS/ESI (+) spectroscopy.
In this rapidly evolving era, natural product-based discovery of hybrid molecules or multi-targeted drug therapies have shown promising results and are trending nowadays. The new hybrid molecules will be evaluated for their biological activity such as DNA intercalation and DNA photocleavage activity.

REFERENCES

[1] Jafari, E.; Khajouei, M.R.; Hassanzadeh, F.; Hakimelahi, G.H.; Khodarahmi, G.A., Res. Pharm. Sci., 2016, 11, 1-14.

[2] Tiwary, B.K.; Pradhan, K.; Nanda, A.K.; Chakraborty, R., J. Chem. Biol. Ther., 2015, 104, 1

[3] Detsi, A., Majdalani, M., Kontogiorgis, C.A., Hadjipavlou-Litina, D., Kefalas, P., Bioorganic & Medicinal Chemistry, 2009, 17, 8073-8085

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