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Corrigendum

Corrigendum to "HMBA depolymerizes microtubules, activates mitotic checkpoints and induces mitotic block in MCF-7 cells by binding at the colchicine site in tubulin" [Biochem. Pharmacol. 80 (2010) 50–61]

Biswa Prasun Chatterji, Mithu Banerjee, Parminder Singh, Dulal Panda *

Department of Biosciences and Bioengineering, Indian Institute of Technology Bombay, Powai, Mumbai 400076, India

The acronym HMBA is commonly used in reference to 10-[(3-hydroxy-4-methoxybenzylidene)]-9(10H)-anthracenone by Sigma Aldrich (catalogue no. H 4663), by PubChem (CID: 10125800), and in the scientific literature (P. Kovács et al., 2008, Comparative Biochemistry and Physiology, Part B 149: 259–264). However, HMBA is also employed in the literature and by Pubchem (CID: 3616) as an abbreviation for hexamethylene bisacetamide (Young et al., 1988, Cancer Research, 48: 7304–7309; Conley et al., 1989, Cancer Research, 49: 3436–3440). When preparing this report we were unaware that two different compounds with anticancer activity are referred to as HMBA. In the above referenced manuscript, HMBA refers only to 10-[(3-hydroxy-4-methoxybenzylidene)]-9(10H)-anthracenone (HMBA) (Fig. 1), the subject of our study. Hexamethylene bisacetamide was neither purposely cited nor examined in this work. Nonetheless, in the manuscript we inadvertently described work and cited 12 articles concerning hexamethylene bisacetamide in the Introduction thinking they concerned work on 10-[(3-hydroxy-4-methoxybenzylidene)]-9(10H)-anthracenone. These references [1–12] were not cited elsewhere in the manuscript. We apologize for the confusion caused by incorrectly citing literature for hexamethylene bisacetamide in the mistaken belief the referenced work was on the anthracenone. Besides clarifying this point, we hope that this communication alerts other investigators in this field to the existence of two different anticancer agents with identical acronyms.

As the first paragraph and a portion of the second paragraph of the Introduction and the references cited therein (refs. [1–12]) relate to hexamethylene bisacetamide rather 10-[(3-hydroxy-4-methoxybenzylidene)]-9(10H)-anthracenone, we retract the following sentences from this section of the manuscript:

"HMBA (Fig. 1) was used in several phase I and one phase II clinical trials against different human cancers in the 1980s and 1990s. It has shown solid tumor regression in several Phase I trials when administered to patients with treatment-refractory or unresponsive tumors [1–3]. However, the efficacy was limited due to side-effects, *e.g.*, neurotoxicity or thrombocytopenia. In a Phase II clinical trial involving patients suffering from myelodysplastic syndrome or acute myelogenous leukemia, HMBA caused a partial or complete amelioration of symptoms in 9 out of 41 patients [4]. Apart from anticancer activity, HMBA has also shown promise in treating HIV infections [5]. HMBA treatment of latent CD4+ T cells from recovering patients carrying HIV-1 showed clearance of the latent virus.

In spite of its relative success in clinical trials, its mode of action was not clear. Based upon studies on cultured cells, HMBA was thought to induce differentiation in malignant cells so that they return to normalcy after differentiation [6]. It was suggested that HMBA induced differentiation in murine erythroleukemia cells by modulating protein kinase C mediated signaling pathway and by suppressing cdk4-dependent kinase activity and hypophosphorylating retinoblastoma tumor suppressor protein [7,8]. HMBA has been suggested to inhibit Akt and MAPK signaling cascade in lung cancer cells [9]. Moreover HMBA has been shown to induce apoptosis in human myeloma cells, malignant pleural mesothelioma cells and hepatocellular carcinoma cells by down-regulating Bcl-2 [10–12]".

The next sentence of the second paragraph "A recent study has suggested that tubulin is the primary target of HMBA in cancer cells [13]" needs to be replaced by "10-[(3-Hydroxy-4-methoxybenzylidene)]-9(10H)-anthracenone (HMBA) (Fig. 1) has been found to potently inhibit proliferation of various types of cancer cells in culture and tubulin has been suggested to be its primary target [13]".

These corrections have no bearing on the results, discussion or conclusions drawn from the work described in this report.

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* Corresponding author. Tel.: +91 222576 7838/770; fax: +91 222572 3480.
E-mail address: panda@iitb.ac.in (D. Panda).

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