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**Novel Carbazole Sulfonamide Derivatives of Antitumor Agent: Synthesis,  
Antiproliferative Activity and Aqueous Solubility**

**Lianqi Sun<sup>a</sup>, Yanbin Wu<sup>a</sup>, Yonghua Liu<sup>a</sup>, Xiaofang Chen<sup>a\*</sup>, Laixing Hu<sup>a\*</sup>**

*<sup>a</sup> Institute of Medicinal Biotechnology, Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing 100050, People's Republic of China*

\* Corresponding author. Tel. /fax: +86 10 63132113.

E-mail address: hulaixing@hotmail.com (L.X. Hu); chenchemistry@hotmail.com (X.F. Chen)

**Abstract:**

The current optimization of IG-105 (**3**) on the carbazole–ring provided a series of new carbazole sulfonamides derivatives **13a-13m**. All of the compounds have been evaluated against HepG2 cells (hepatoma cancer) for antiproliferative activity. Compounds that showed activity better or comparable to that of **3** versus HepG2 were evaluated against MCF-7 (breast cancer), MIA PaCa-2 (pancreatic cancer), and Bel-7402 (hepatoma/liver cancer) for antiproliferative activity. Of the seven compounds selected for further study five (**13b**, **13g**, **13j**, **13k** and **13l**) were found to give IC<sub>50</sub> values against the four cell lines comparable to those for **3**. Two compounds (**13f** and **13i**) were more active than **3** and their activity against HepG2 and MCF-7 (IC<sub>50</sub>: 0.01-0.07 μM) approached that of the positive controls podophyllotoxin (**podo**) and **CA-4**. Most of compounds showed aqueous solubility (0.11-19.60 μg/mL at pH 7.4 and 2.0) better than **3**. These promising results warrant further development of new compounds **13f** and **13i** as potential potent antitumor drug candidates.

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