Estrogenic Effects of Extracts and Isolated Compounds from Belowground and Aerial Parts of *Spartina* anglica

Sullim Lee^{1,†}, Geum Jin Kim^{2,3,†}, Hyukbean Kwon², Joo-Won Nam², Ji Yun Baek^{4,5}, Sang Hee Shim⁶, Hyukjae Choi^{2,3*} and Ki Sung Kang^{4,*}

- Department of Life Science, College of Bio-Nano Technology, Gachon University, Seongnam 13120, Republic of Korea; sullimlee@gachon.ac.kr (S.L.)
- College of Pharmacy, Yeungnam University, Gyeongsan 38541, Republic of Korea; canta87@ynu.ac.kr (G.J.K.), zero9602@gmail.com (H.K.), jwnam@yu.ac.kr (J.-W.N.)
- 3 Research Institute of Cell Culture, Yeungnam University, Gyeongsan, Gyeongbuk 38541, Republic of Korea
- College of Korean Medicine, Gachon University, Seongnam 13120, Republic of Korea; wldbsttn@naver.com (J.Y.B.), kkang@gachon.ac.kr (K.S.K.)
- Department of Food Science, Gyeongnam National University of Science and Technology, Jinju 52725 Republic of Korea; wldbsttn@naver.com (J.Y.B.)
- Natural Products Research Institute, College of Pharmacy, Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul, 08826, Republic of Korea; sanghee_shim@snu.ac.kr (S. H. S.)
- * Correspondence: E-mail: kkang@gachon.ac.kr; Tel.: 82-31-750-5402 (K.S.K.), h5choi@yu.ac.kr; Tel.: 82-53-810-2824 (H.C.)
- [†] These authors contributed equally to this work.

Contents

Figure S1. 1D NMR spectra of compound 1 in CD₃OD

Figure S2. 2D NMR spectra of compound 1 in CD₃OD

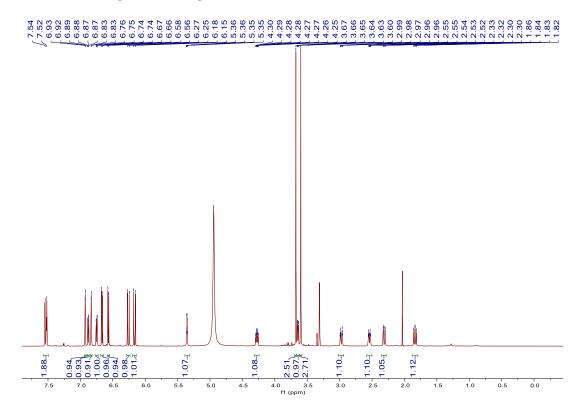
Figure S3. 1D NMR spectra of compound 2 in DMSO-d6

Figure S4. 1D NMR spectra of compound 3 in CD₃OD

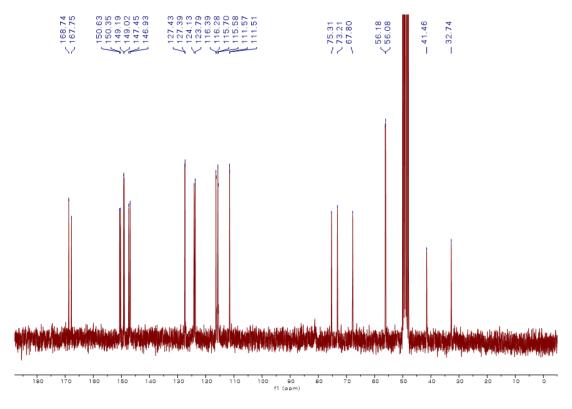
Figure S5. 1D NMR spectra of compound 4 in CD₃OD

Figure S6. 1D NMR spectra of compound 5 in CD₃OD

Figure S1. 1D NMR spectra of compound 1 in CD₃OD

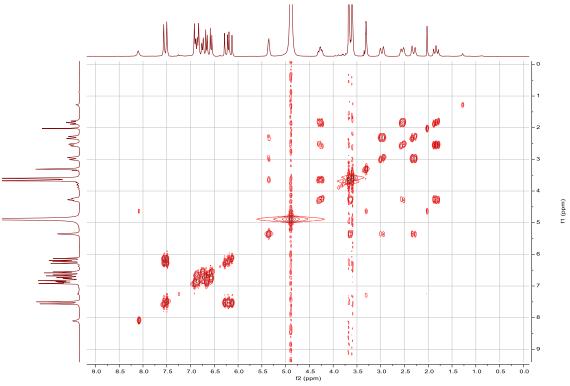


The ¹H NMR spectrum of **1** (600 MHz)



The ^{13}C NMR spectrum of 1 (62.5 MHz)

Figure S2. 2D NMR spectra of compound 1 in CD₃OD



The ¹H-¹H COSY spectrum of **1** (250 MHz)

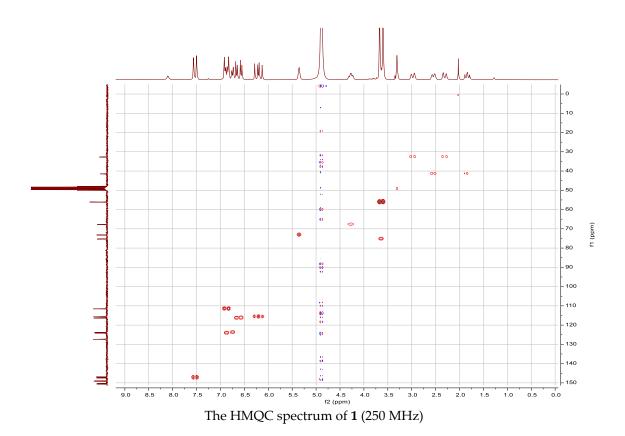


Figure S2. (continued)

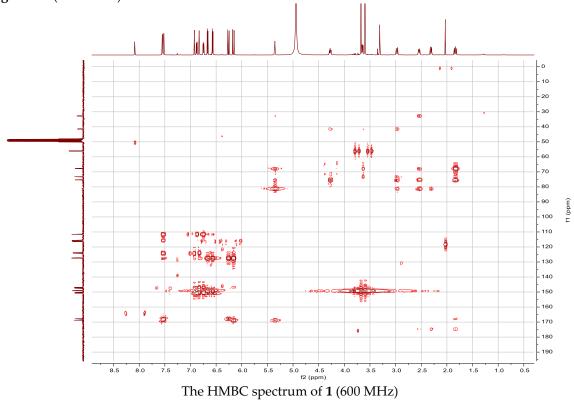
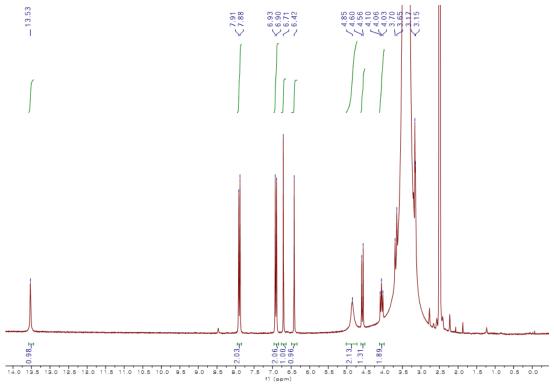
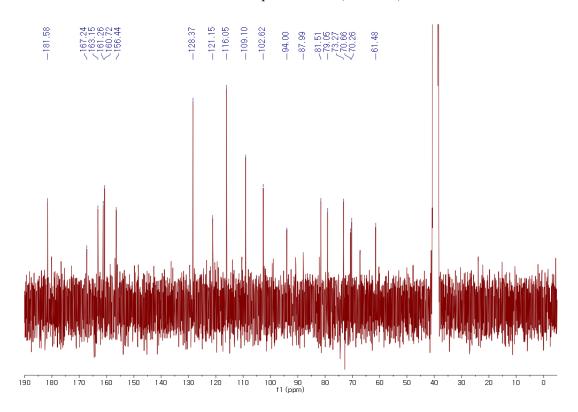


Figure S3. 1D NMR spectra of compound 2 in DMSO-d6



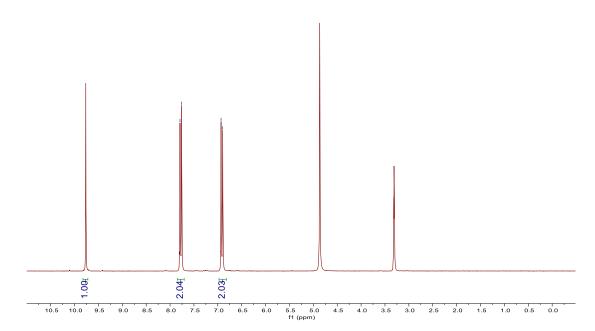
The 1H NMR spectrum of 2 (250 MHz)



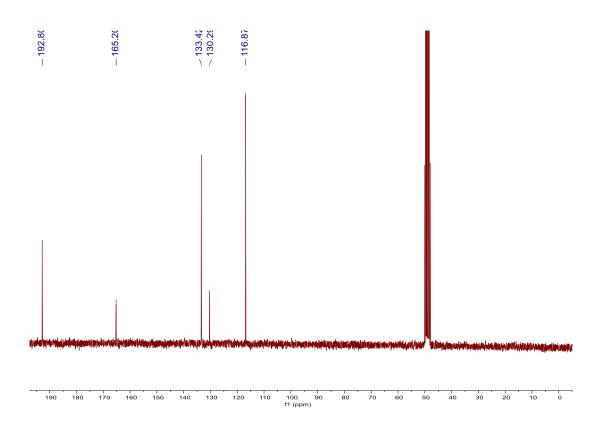
The ^{13}C NMR spectrum of **2** (62.5 MHz)

Figure S4. 1D NMR spectra of compound 3 in CD₃OD



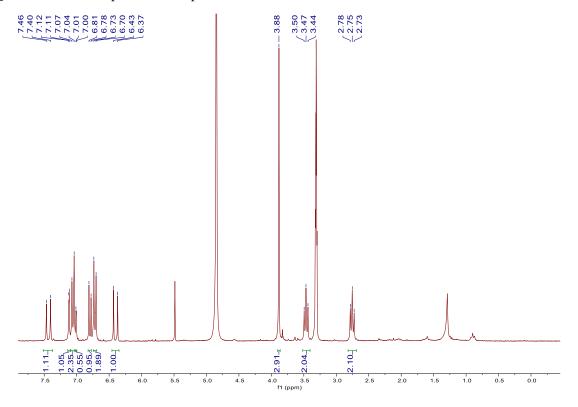


The 1H NMR spectrum of 3 (250 MHz)

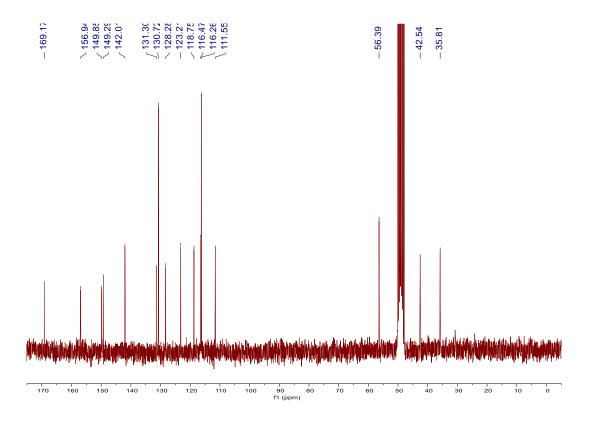


The ^{13}C NMR spectrum of 3 (62.5 MHz)

Figure S5. 1D NMR spectra of compound 4 in CD₃OD

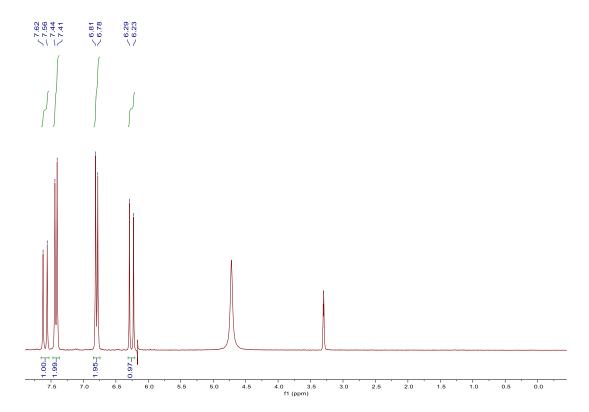


The 1H NMR spectrum of 4 (250 MHz)

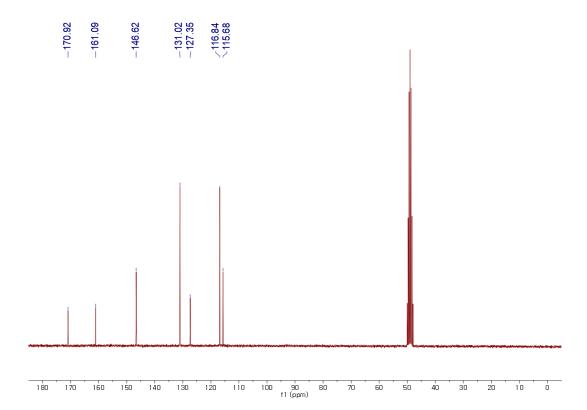


The ^{13}C NMR spectrum of 4 (62.5 MHz)

Figure S6. 1D NMR spectra of compound 5 in CD₃OD



The ¹H NMR spectrum of **5** (250 MHz)



The $^{\rm 13}C$ NMR spectrum of 5 (62.5 MHz)