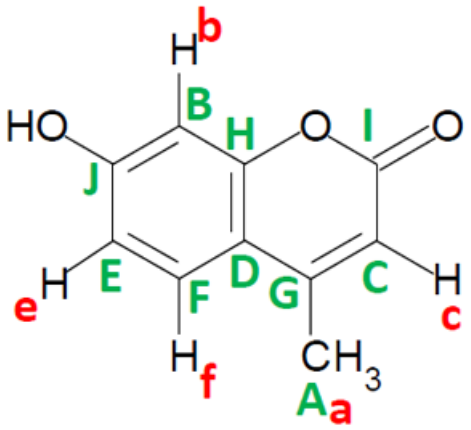
Comparing h2bc and 1,1-adequate

NM160003E

Both h2bc and 1,1-adequate are designed to separate $^{2}J_{CH}$ and $^{3}J_{CH}$ when a combination of cosy and hmbc is unable to identify correlation signals. Features and best applications of these two techniques, which are used for the same objective, are described below.



4-methylumbelliferone

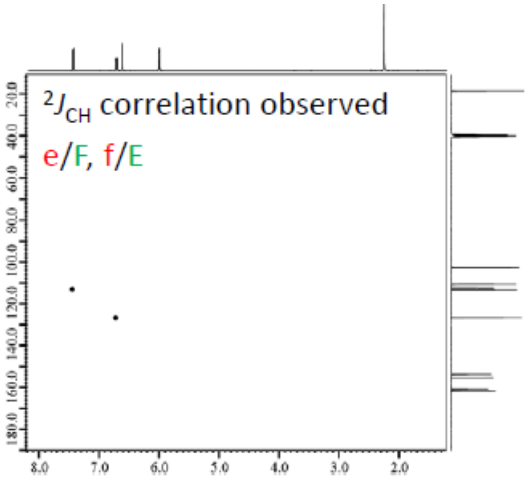
h2bc can only acquire limited correlation signals from 4-methylumbelliferone rich in quarternary carbon shown in the figure. 1,1-adequate can detect more correlation signals although the process takes time. Also, because the fatty series and aromatic ring have different $^{1}J_{CC}$ values, setting measuring conditions using either value will change the levels of sensitivity of the correlation signals detected.

【h2bc】

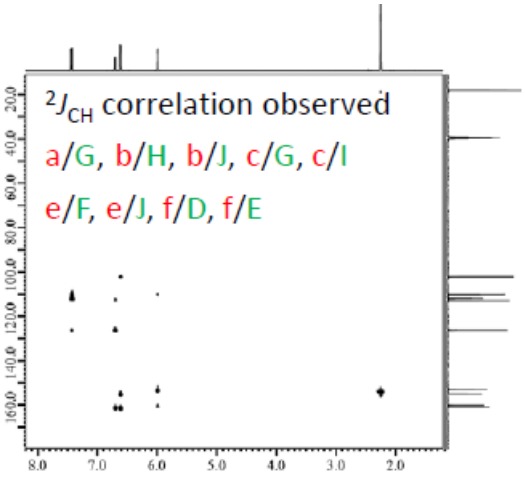
- Correlation of 2JCH only observed
- Higher sensitivity than 1,1-adequate
- No correlation with quarternary carbon observed
- Good result acquired under default conditions

【1,1-adequate】

- Correlation of both 1JCH and 2JCH observed
- Lower sensitivity than h2bc
- Correlation with quarternary carbon observed as well
- Correlation signal may not be visible under certain conditions (1JCC value)



h2bc, 4 scans (25 min)



1,1-adequate, 48 scans (7h)

Instrument: JNM-ECZ400S+ROYAL probe; sample:100 mg 4-methylumbelliferone