Synthesis and EPR Evaluation of the Nitrone PBN-[*tert*-^{13}C] for Spin Trapping Competition

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N-[*tert*-^{13}C]Butyl *C*-phenyl nitrone (PBN-[*tert*-^{13}C]) has been synthesized for an EPR spin trapping competition study. The newly synthesized PBN-[*tert*-^{13}C] shows different ^{13}C-hyperfine splitting constants (a_{13C}) when it traps free radicals as compared to another ^{13}C-labeled PBN analogue, *N*-*tert*-butyl *C*-phenyl [*nitronyl*-^{13}C]nitrone (PBN-[*nitronyl*-^{13}C]). The PBN-[*tert*-^{13}C] hydroxyl adduct gives a larger a_{13C} value (5.14 G) as compared to the PBN-[*nitronyl*-^{13}C] hydroxyl adduct (4.36 G). This gain of the a_{13C} value decreases the chance of EPR signal overlap, thus providing a more resolved EPR spectrum when PBN-[*tert*-^{13}C] is used as an internal standard for EPR spin trapping competition studies of hydroxyl radical formation.