

13C NMR spectrum [16, 17].

Figure 1 shows the panoramic 13C NMR spectrum of an aqueous extract of BS. The x-axis represents the chemical shift in ppm, ranging from 0 to 200. The spectrum displays several distinct peaks, with the most prominent ones appearing between 10 and 40 ppm, characteristic of carbohydrates and other low molecular weight compounds. A small peak is visible at approximately 170 ppm, likely corresponding to a carbonyl group. The spectrum is presented with broadband proton suppression, which is evident from the absence of a large solvent peak at 4.7 ppm (D2O).

The spectrum was recorded using a Bruker AVANCE-300 (125 MHz) NMR spectrometer. The sample was prepared in D2O, and the chemical shift was referenced to Si(CH3)4. The acquisition parameters were optimized to ensure high resolution and sensitivity. The spectrum shows a complex pattern of peaks, indicating the presence of multiple different carbon environments in the sample.

The chemical shift ranges from 0 to 200 ppm. The most significant peaks are observed in the 10-40 ppm region, which is typical for the anomeric carbons of sugars. The peak at approximately 170 ppm is characteristic of a carbonyl group, possibly from a protein or a small molecule. The spectrum is well-resolved, allowing for the identification of individual carbon environments.

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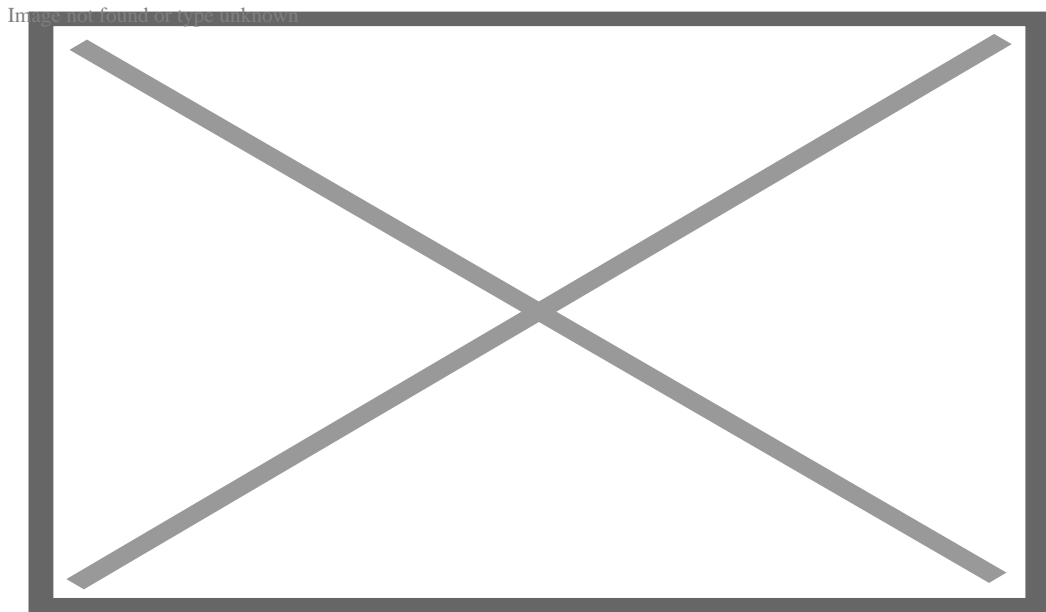


Fig. 1. Panoramic 13C NMR spectrum with broadband proton suppression of an aqueous extract of BS

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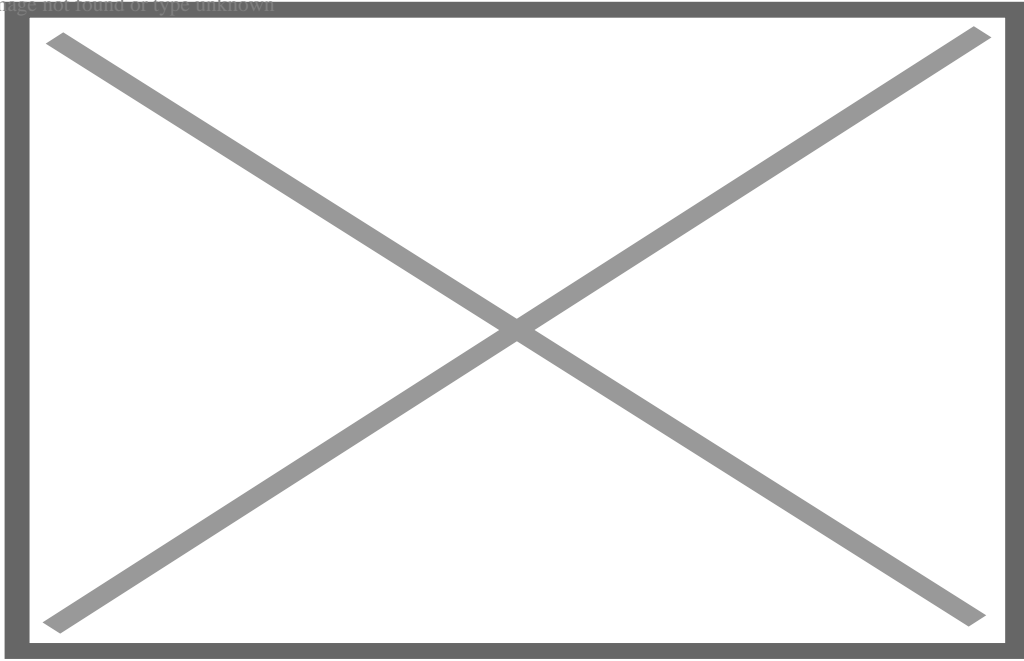


Fig. 2. Panoramic ^{13}C NMR spectrum with broadband proton suppression of a hydroalcoholic extract of BS

Fig. 2. Panoramic ^{13}C NMR spectrum with broadband proton suppression of a hydroalcoholic extract of BS

Figure 2 shows the panoramic ^{13}C NMR spectrum of a hydroalcoholic extract of BS with broadband proton suppression. The spectrum displays a complex pattern of peaks, characteristic of a natural product extract. The x-axis represents the chemical shift in ppm, ranging from approximately 0 to 200. The spectrum is divided into several regions: the aliphatic region (0-60 ppm) shows numerous peaks, the carbonyl region (160-200 ppm) shows a few sharp peaks, and the aromatic region (110-150 ppm) shows a cluster of peaks. The spectrum is presented as a line plot with a white background and a black border.

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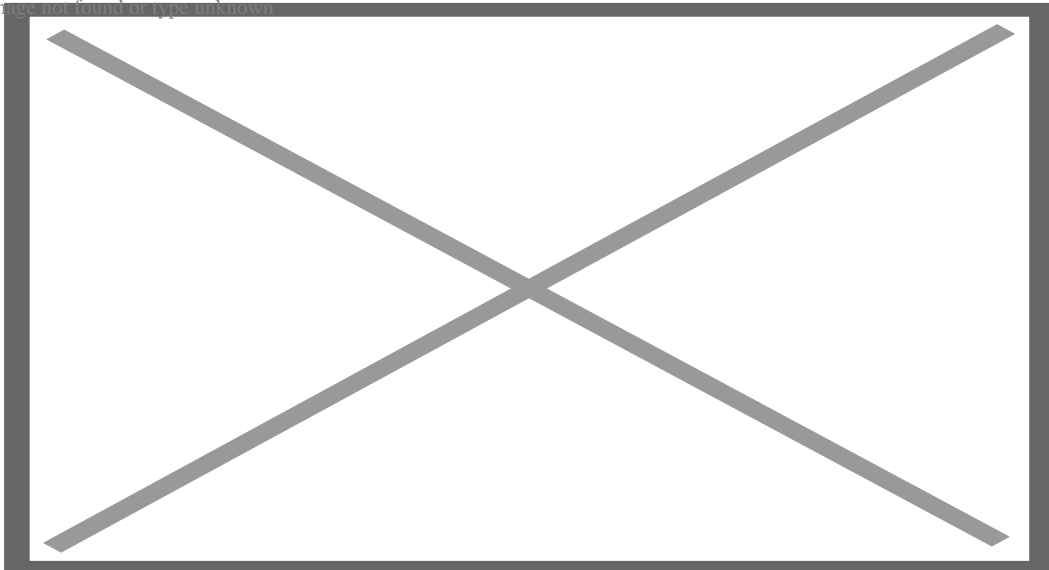


Fig. 3. Panoramic ¹³C NMR spectra with broadband proton suppression of an aqueous extract of BS (lower spectrum) and a hydroalcoholic (70 %) extract of BS (upper spectrum)

Fig. 4. Survey ¹³C NMR spectra with broadband proton suppression - 1) aqueous extract of SC (lower spectrum), 2) hydroalcoholic extract of SC (upper spectrum)

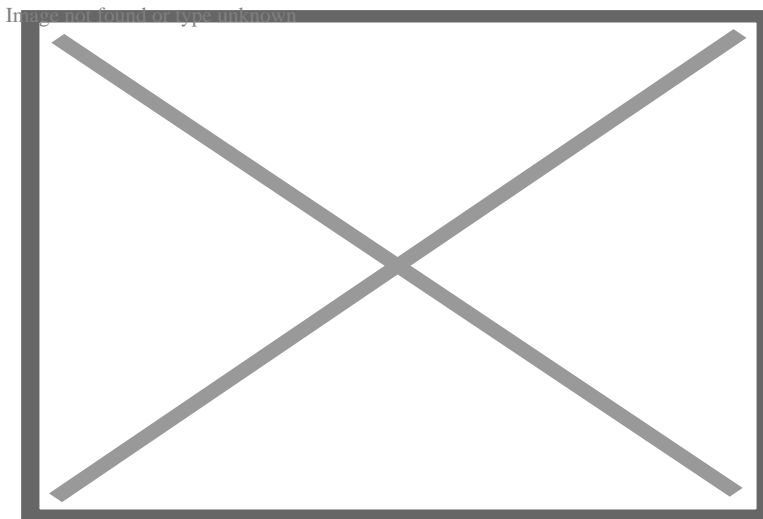
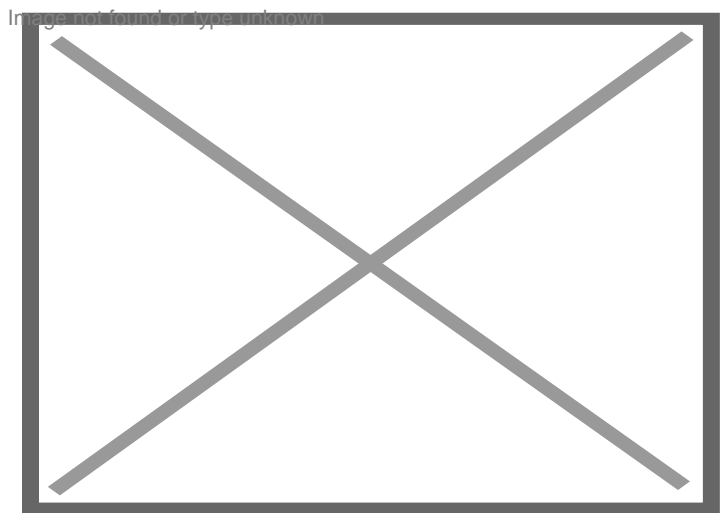
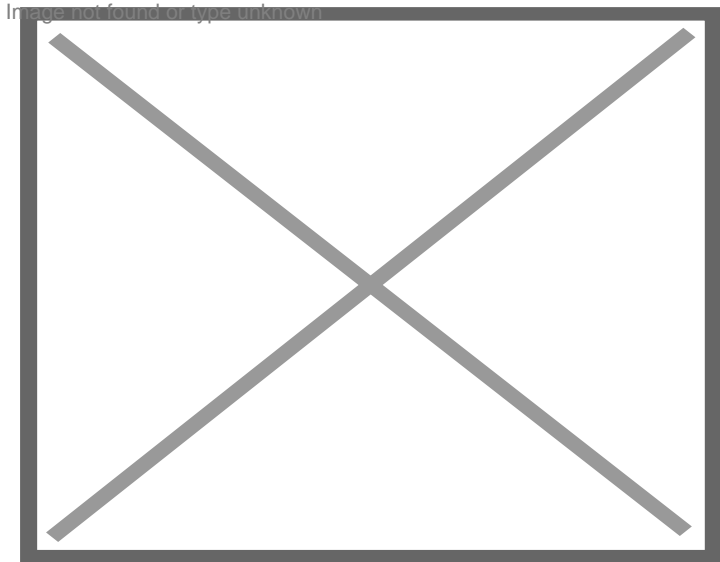
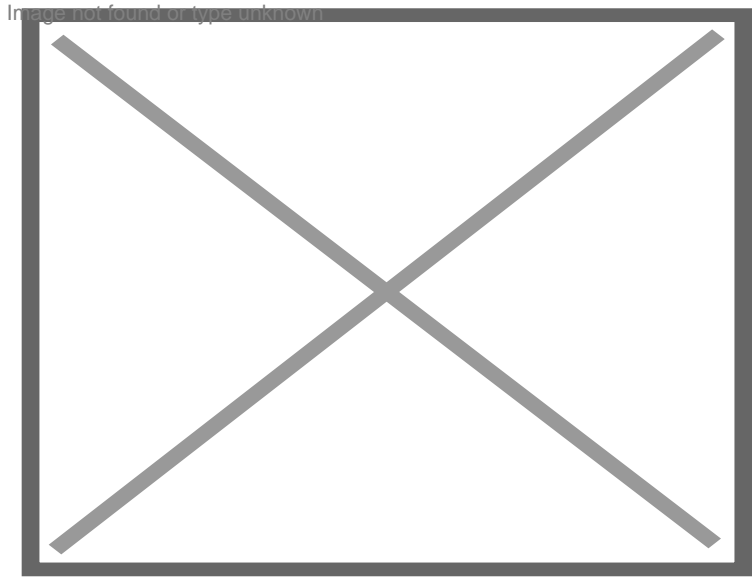


Fig. 4. Survey ¹³C NMR spectra with broadband proton suppression - 1) aqueous extract of SC (lower spectrum), 2) hydroalcoholic extract of SC (upper spectrum)

Fig. 3. Panoramic ¹³C NMR spectra with broadband proton suppression of an aqueous extract of BS (lower spectrum) and a hydroalcoholic (70 %) extract of BS (upper spectrum)

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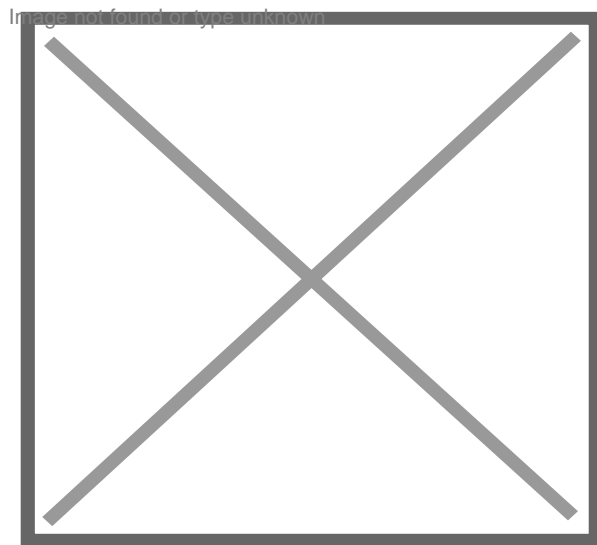
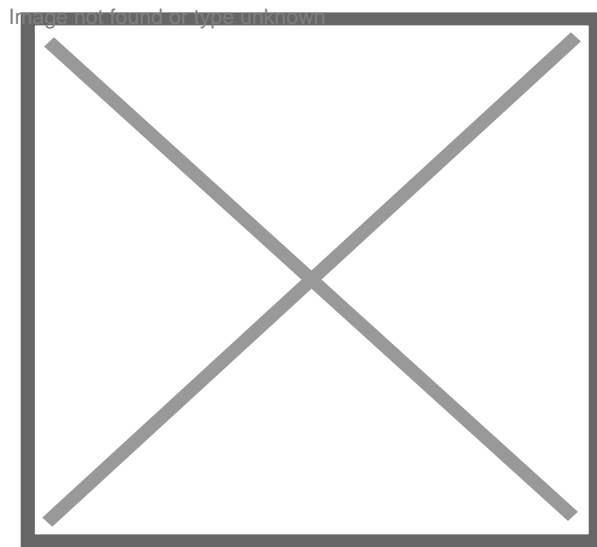
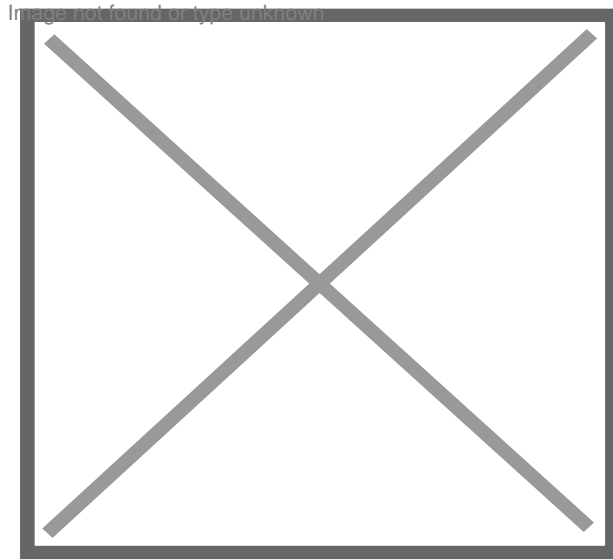


Fig. 5. Stretched ^{13}C NMR spectra with broadband proton suppression of SC extracts: A – water,

