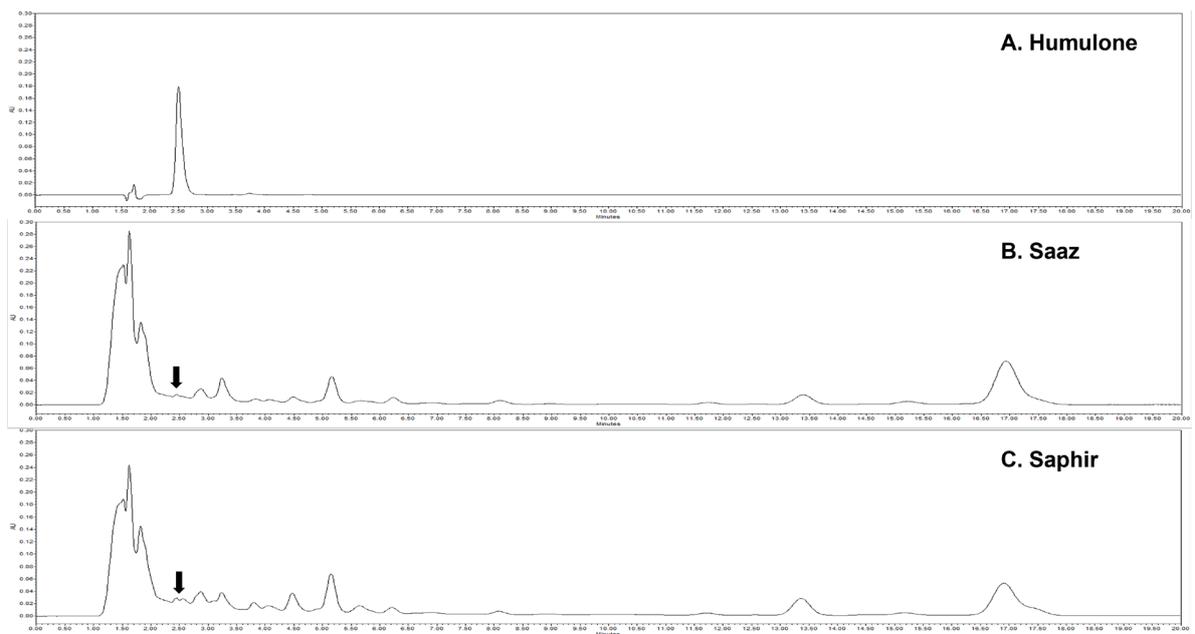
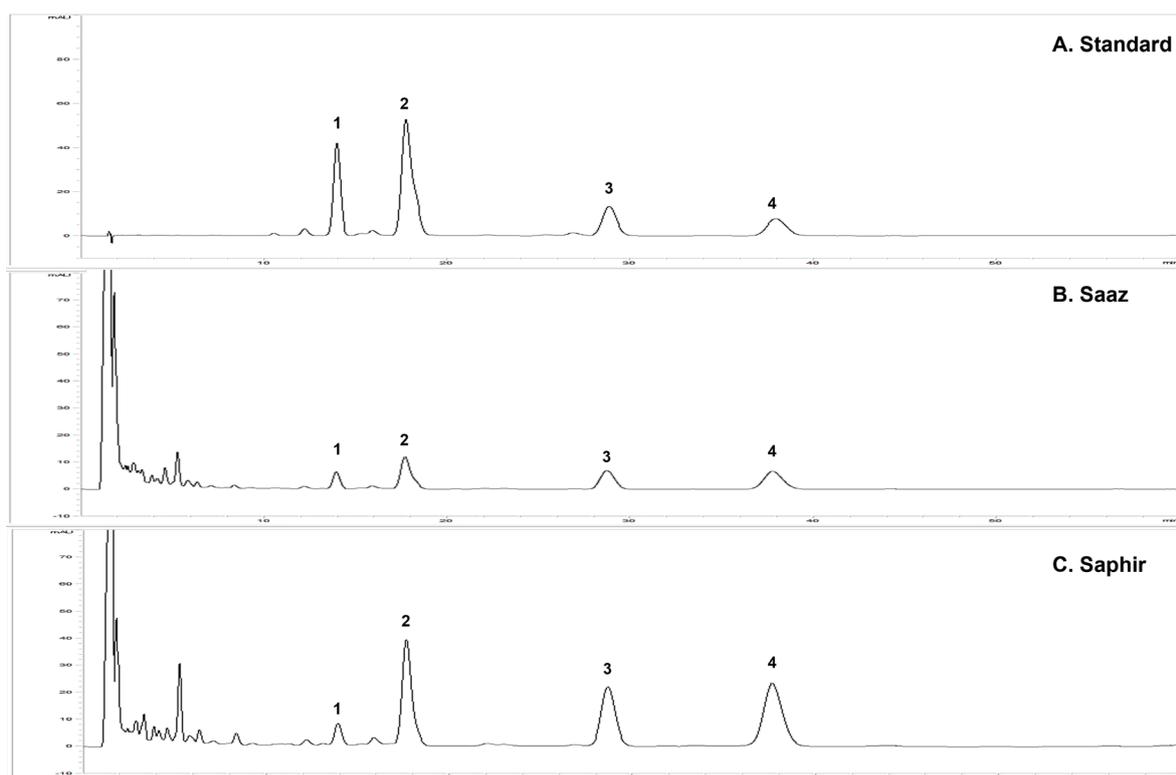


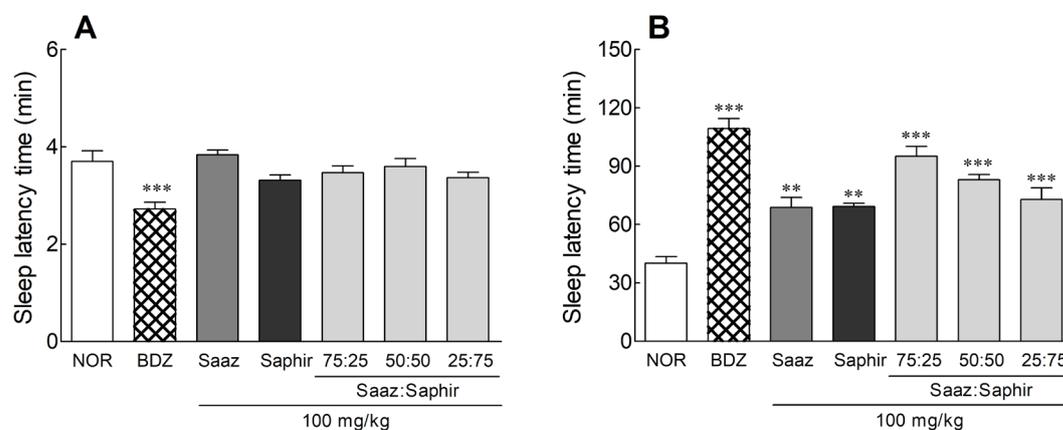
**Figure S1:** HPLC chromatograms of (A) standard xanthohumol, (B) Saaz ethanol extract, and (C) Saphir ethanol extract.



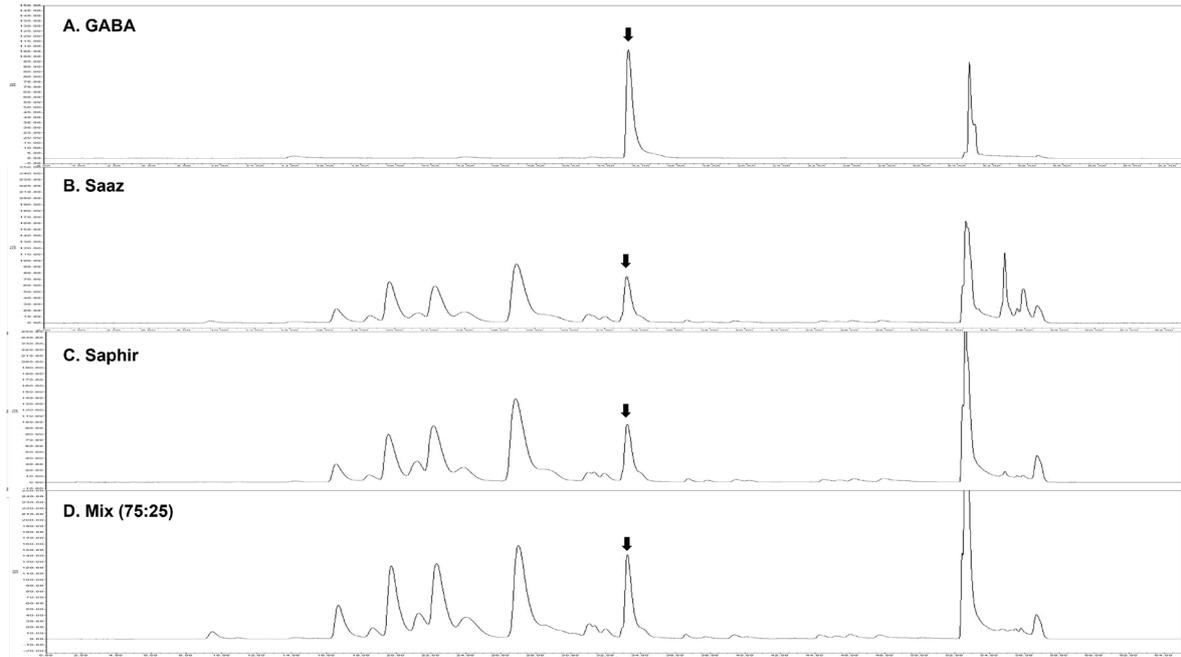
**Figure S2:** HPLC chromatograms of (A) standard humulone, (B) Saaz ethanol extract, and (C) Saphir ethanol extract.



**Figure S3:** HPLC chromatograms of (A) standard, (B) Saaz ethanol extract, and (C) Saphir ethanol extract. 1: cohumulone; 2: adhumulone; 3: colupulone; 4: adlupulone.



**Figure S4:** Effects of hops on sleep latency time (A) and total sleep time (B) in mice that received a hypnotic dose of pentobarbital (42 mg/kg, i.p.). NOR: 0.9% NaCl (physiological saline) group (normal control), BDZ: benzodiazepine treatment (positive control, 200  $\mu$ g/kg), Saaz 100 mg/kg, Saphir 100 mg/kg, Saaz-Saphir mixture (75:25, 50:50, and 25:75; 100 mg/kg). Values are presented as the mean  $\pm$  standard error of the mean (SEM) for each group,  $n=7$ . \*\* $p < 0.01$  and \*\*\* $p < 0.001$  vs. NOR by Tukey's multiple comparison test.



**Figure S5:** HPLC chromatograms of (A) standard GABA, (B) Saaz extract treated group, (C) Saphir extract treated group, and (D) Saaz-Saphir mixture treated group.