SONICATION AND VORTEXING EXTRACTION OF SOY ISOFlavones


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Twelve free and conjugated forms of isoflavones have been isolated from different soybean samples. The isoflavone forms have a wide variation in polarities, thus development of an adequate extraction procedure for all isoflavones has been a challenging task. The objective of this study was to compare vortexing and sonication extraction for soy isoflavones determination. Defatted soybean flour were extracted with a mixture of solvents (water: acetone: ethanol, 1:1:1, v/v/v) during 10, 30, 45 and 60 min at room temperature by sonication and vortexing. The isoflavones separation and quantification were performed using a Waters Acquity UPLC® system (reverse phase column Acquity UPLC® BEH C18, 2.1 mm x 50.0 mm x 1.7 µm particles) and injections of 1.4 µL with a non-linear gradient and an initial phase of 90%/10% (A/B). Total run time was 12 min, the flow rate, 0.7 mL min⁻¹ and temperature was 35 °C. The extraction by vortexing for 30 and 45 did not show difference (145.19 mg 100 g⁻¹) as well as sonication for 30 and 10 min and vortexing for 60 min (147.14 mg 100 g⁻¹). However, the proportion of isoflavones forms (glycosil, malonyl, acetyl and aglycones) did not change for all procedures and extraction times. The highest content of total isoflavones (153.45 mg 100 g⁻¹) was showed with extraction using sonication bath for 60 min and the lowest level was observed by vortexing for 10 min (138.37 mg 100 g⁻¹).