

## Characterization of Apple Seed Oil from Asturias, Spain

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In the last years, there are a considerable interest in finding new food resources that will meet the health and nutritional needs of the world's population. Spain, is one of the most important countries of the European Union in production of cider, produced about 585000 tons of apple as fruit for human consumption and 75000 tons of apple to make cider. Asturias is the region with the most important production of apple for production of cider and have 22 apple varieties denomination of origin (DO). In the process for production of cider there are two important by-products, seeds of apple and skins. The seeds has variable contents of oils. In this industry of cider, this seed is not used, in general, for producing apple oil, and it is a waste.

The content and composition of lipids isolated from seeds of seven apple seed species Blanquina, Raxao, Collaos, Durona, Riega, Solarina and Limón Montés for making cider with DO from Asturias (Spain) was investigated. The highest content in oil corresponded to Collao apple at  $22.73 \pm 0.81$  g/100g seed, followed by Raxao and Riega at  $20.19 \pm 0.74$  g/100g seed and  $19.67 \pm 0.85$  g/100g seed, respectively. The polyunsaturated fatty acid content was also studied, the most notable findings being linoleic acid was found to be the main component in the oil of Limón Montés species ( $60.78 \pm 3.07$  g/100 g of oil) followed by Riega species ( $60.01 \pm 3.41$  g/100 g of oil). The sterol content was likewise studied, Solarina seed oil was the one with the highest content at  $558.52 \pm 9.42$  mg 100 g<sup>-1</sup> oil while Blanquina seed oil was the one that presents the lowest values at  $166.55 \pm 1.89$  mg 100 g<sup>-1</sup> oil. Phosphatidylcholine ( $70.58 \pm 3.85$  % of the total PL) was found to be the main constituent in the blanquina specie followed by the Collaos specie ( $55.55 \pm 2.96$  % of the total PL). Raxao presented the highest content in beta-tocopherol at  $125.29 \pm 12.62$  mg 100 Kg<sup>-1</sup> and Alfa-tocopherol was the most important tocopherols in limón Montés with a content of  $84.68 \pm 5.61$  mg Kg<sup>-1</sup> oil . The main triglycerides were LLP ( $41.17 \pm 1.98$ - $39.32 \pm 1.66$ ) followed by LLL ( $27.12 \pm 1.32$ - $17.80 \pm 1.96$ ).