Sonication and water-bath methods extraction of phenolics compounds in *Sorghum bicolor* (L.) Moench (AG1040) grains evaluated by colorimetric assay

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Key Words: Sorghum; Colorimetric assay.

**Introduction:** *Sorghum bicolor* L. Moench. also known in Brazil as Sorgo. It is the fifth most cultivated cereal in the world the other four are corn, rice, barley, wheat (Neumann, Rev. Bras. de Milho e Sorgo, 2, 43, 2003). Some genetic varieties of Sorgo contain the highest content of phenolics compounds in a grain among all the cereals. The main secondary metabolites are phenolics acids, flavonoids and tannins (Rodrigues, Ciênc. Agrotec., 33, 1972, 2009). The phenolics have many biological activities. These compounds are able to scavenge free radicals and prevent degenerative disorders like heart disease and cancer (Dyres, Ceral Food World, 52, 105, 2007). The main purpose of this paper it is evaluate the phenolics compounds extraction in sorgo grains using colorimetric assay.

**Experimental:** *Sorghum bicolor* (L.) Moench (AG1040) seeds, purchased from Agroceres Co. (Brazil), in July 2011 were milled in a knife mill. A sample of the powder was divided in two parts and each part was mixed with distilled water. One part was extracted by sonication with no temperature control (method I) the other part was extracted using water-bath, ≃ 85°C (method II). Each extraction was performed in 30 minutes. The colorimetric assay was based on the Hagerman and Butler method, adapted by Mole and Waterman (Waterman, Oeco., 72, 137, 1987). All solutions were analysed in triplicate.

**Results/Discussion:** See table 1. The best phenols compounds extraction was performed in the conditions described for method I. The sonication extraction was 64% more efficient. The method can be used for these materials in quality control routine.

**Conclusion:** Using colorimetric assay was possible to evaluate the best extraction method for phenolics compounds.

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Table 1. Rate of phenolics compounds in *Sorghum bicolor* (L.) Moench using different extraction methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Method I</th>
<th>Method II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorgo seeds/water volume</td>
<td>1g/250 cm³</td>
<td>1g/250 cm³</td>
</tr>
<tr>
<td>Phenols rate (%)</td>
<td>0, 880 ± 0, 015</td>
<td>0, 316 ± 0, 115</td>
</tr>
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