INTRODUCTION
In the present research, the study of an improved cooking process in conditions of low sulfidity alkaline using as cooking additive, the disodium salt 9,10-dihydroxianthracene, soluble at alkaline medium is proposed. This additive is feed in this active form, in the middle stage of the cooking process in which its protective action on the cellulose is more necessary, to decrease a noticeable alkaline hydrolysis.

The lignocellusic raw material that will be used in the study comes from agriculture wastes or subproducts. The use of this raw material has as objective to decrease the consumption of conventional woods, pulps and paper imports and the surplus foods of the European Union.

In parallel, the reduction of the anthraquinone in alkaline medium takes place in an auxiliary reactor to obtain disodium salt 9,10-dihydroxianthracene by means of the use of liquor of the Kraft process or sodium or potassium hydroxide or any caustic alkali along with a reducer agent as sulphide, sulphite, bisulfit, hydrosulfit or dithionate. The conversion of the anthraquinone is independent on the principal reactor operation, so the additive can be added in a soluble and active form from the auxiliary reactor to the principal reactor in the extended delignification stage in. In this stage the cellulose can be more degraded by the alkali, so improving the collection of cellulose pulps, due to the highest efficiency of the catalyst additive and to its protective effect on the cellulose.

METHODOLOGY
The des lignification process of lignocellusic material from agricultural waste was studied. During the process, an anthraquinone reduction in alkaline medium was carried out, in parallel with the digestion of the raw material (3-7). Disodium salt 9, 10-dihydroxianthracene was obtained by a Kraft liquor process or sodium or potassium hydroxide or any caustic alkali as sulphide, sulphite, bisulfit, hydrosulfit or dithionate. A small amount of caustic soda liquor and sodium sulfide, used in the Kraft process, are added to the auxiliary reactor where they are mixed with the optimal amount of anthraquinone. In this reactor, in which stirring, heating and pressure are applied, the reduction reaction of anthraquinone to disodium salt 9, 10-dihydroxianthracene takes place. The temperature and pressure in the auxiliary reactor were higher than the principal one which permits disodium salt 9, 10-dihydroxianthracene formed into the principal reactor. This addition protects cellulose and improve dis lignification conditions when extended lignification stage occurs.

RESULT AND DISCUSSION

<table>
<thead>
<tr>
<th>Kraft reference cooking with E. Globulus chips</th>
<th>Conventional Kraft with anthraquinone addition. E. Globulus chips</th>
<th>Proposed procedure cooking. E. Globulus chips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquor-to-wood ratio: 4/1</td>
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</tr>
<tr>
<td>Active alkali, as Na₂O : 15%</td>
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<tr>
<td>Effective alkali: 13.125%</td>
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</tr>
<tr>
<td>Sulfidity: 25%</td>
<td>Sulfidity: 25%</td>
<td>Sulfidity: 0.05%</td>
</tr>
<tr>
<td>Anthraquinone:</td>
<td>Anthraquinone:</td>
<td>Anthraquinone:</td>
</tr>
</tbody>
</table>

Cooking conditions:
- Temperature (ºC) 120
- Cooking time (min) 90
- Top temperature (ºC) 150
- Characteristics of the pulps:
  - Kappa index, KI = 16.0
  - Intrinsic viscosity, IV = 1335 mL/g
  - Total yield: 54.3 %
  - DP=4380

Figure 2. Pulping procedure comparison

CONCLUSIONS
The result showed that the proposed procedure has improved the characteristics the pulps by a decrease in KI and an increase of the intrinsic viscosity. The principal one which permits disodium salt 9, 10-dihydroxianthracene formed into the principal reactor. This addition protects cellulose and improves des lignification conditions when extended lignification stage occurs.

REFERENCES