E-ALGLS 10/17
(EC 4.2.2.3) poly(beta-D-mannuronate) lyase
CAZY Family: PL7

PROPERTIES

1. ELECTROPHORETIC PURITY:
   - Single band on SDS-gel electrophoresis (MW ~ 39,600)
   - Single major band on isoelectric focusing (pI ~ 5.6)

2. SPECIFIC ACTIVITY:
   65 U/mg protein (on sodium alginate) at pH 7.2 and 40°C.

   One Unit of alginate lyase activity is defined as the amount of enzyme required to
   produce an increase in absorbance of 1.0 per minute at 235 nm and 40°C in the
   following reaction conditions:

<table>
<thead>
<tr>
<th>Component</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tris.HCl buffer (100 mM)</td>
<td>0.8 mL</td>
</tr>
<tr>
<td>Sodium Alginate (10 mg/mL)</td>
<td>0.2 mL</td>
</tr>
<tr>
<td>Alginate Lyase</td>
<td>0.1 mL</td>
</tr>
</tbody>
</table>

3. SPECIFICITY:
   Endo-acting β-elimination cleavage of the polysaccharide, alginate.

4. PHYSICOCHEMICAL PROPERTIES:
   pH Optima: 7.2
   pH Stability: 4.0 - 9.0 (> 75% control activity after 24 hours at 4°C)
   Temperature Optima: 40°C (10 min. reaction)
   Temperature Stability: up to 40°C (> 90% control activity after 15 min.)

5. STORAGE CONDITIONS:
   The enzyme is supplied as an ammonium sulphate suspension in 0.02% (w/v) sodium
   azide and should be stored at 4°C. For assay, this enzyme should be diluted in
   TRIS.HCl buffer (100 mM), pH 7.2 containing 1 mg/mL BSA. Swirl to mix the
   enzyme immediately prior to use.

6. REFERENCES:
   overexpression in Escherichia coli, purification, and characterization of alginate lyase IV (A1-IV). Protein Expr
   Purif. 29, 33-41.

   Miyake, O., Ochiai, A., Hashimoto, W., & Murata, K. (2004). Origin and diversity of alginate lyases of