Composition
Hypertonic lactate solution 0.5 M
Each 250 ml TOTILAC® solution contains:
Sodium lactate sol (50%) 28.25 g
(equal with 56.5 g Sodium lactate)
Potassium chloride 0.075 g
Calcium chloride 2H2O (100%) 0.05 g
Water for injection ad 250 ml

Yielding:

<table>
<thead>
<tr>
<th></th>
<th>mmol/L</th>
<th>Meq/L</th>
<th>g/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na⁺</td>
<td>504.15</td>
<td>504.15</td>
<td>11.5</td>
</tr>
<tr>
<td>K⁺</td>
<td>4.02</td>
<td>4.02</td>
<td>0.16</td>
</tr>
<tr>
<td>Ca²⁺</td>
<td>1.36</td>
<td>2.72</td>
<td>0.05</td>
</tr>
<tr>
<td>Cl⁻</td>
<td>6.74</td>
<td>6.74</td>
<td>0.24</td>
</tr>
<tr>
<td>Lactate</td>
<td>504.15</td>
<td>504.15</td>
<td>44.92</td>
</tr>
</tbody>
</table>

Description
TOTILAC® is a sterile non-pyrogenic solution containing hypertonic concentration of sodium lactate with physiological concentration of potassium chloride and calcium chloride in water for injection. This solution has an osmolarity of 1020 mOsm/L and a pH of ± 7.0

Pharmacology
TOTILAC® contains strong ions which are fully dissociated into anions (lactate and chloride) and cations (sodium, potassium, calcium) when dissolved in water.

Sodium, a principal cation of extracellular fluid and plays a large part in plasma tonicity. Its high concentration provides hypertonicity that is beneficial in fluid resuscitation as it improves hemodynamic with small volume.

Lactate, a physiological metabolite and acts as an energetic substrate, which is actively oxidized by every mitochondrion-containing cell, ie. The vast majority of cells in the body especially in highly active organs such as brain, kidney, heart and muscles. Its oxidation results in energy release similar to that of glucose (4 Kcal/g of lactate).
Following a hypoxic period, lactate is a preferred or even an obligatory energy substrate over glucose because lactate acts as a ready to use substrate since its oxidation does not require investment of ATP, unlike glucose, and its usage prevent the reactive oxygen species (ROS) production.
Beside oxidation, lactate can be converted into glucose via gluconeogenic pathway, which occurs mainly in liver but also in kidney.
Calcium, it plays role in cardiac contractility.
Potassium, it prevents hypokalemia, which might be caused by sodium lactate infusion.
**TOTILAC®** solution is neutral (PH= 7.0) and when lactate is metabolized, it doesn’t cause acidosis effect.

**Post-Coronary Artery Bypass Graft**
The safety and efficacy of **TOTILAC®** was evaluated in 208 patients, divided into 2 groups **TOTILAC®** and Ringer Lactate group. **TOTILAC®** was given at a max. dosage of 10 cc/kg BW over 12 h while RL was given at a max. dosage of 30 cc/kg BW over 12 h.

**Efficacy:** patients with **TOTILAC®** infusion, exhibited a better Cardiac Index (p=0.018) with less total fluid infusion (p<0.0001) compared to that with RL group. The number of patients in **TOTILAC®** group required milrinone was significantly less compared to RL group (28% vs 39%, p< 0.05).

**Safety:** the clinical safety profile was the same with RL, while hypernatremia event (plasma Na>155 mmol/L) did not occur in this study.

**Indications**
- Resuscitation in post Cardiac surgery

**Dosage and Administration** **TOTILAC®** is contraindicated in the states of hypervolemia and hypernatremia (plasma sodium is more than 155 mmol/L).

**Warnings and Precautions**
- Clinical evaluation and periodic laboratory determinations are necessary to monitor changes in fluid balance, electrolyte concentrations and acid base balance during prolonged parenteral therapy or whenever the condition of the patient warrants such evaluation.
- Solutions containing calcium ions should not be administered simultaneously through the same administration set as blood because of the likelihood of coagulation.
- Solutions which contain potassium should be used with great care in the presence of cardiac disease, particularly in digitalized patients, in patients with hyperkalemia, severe renal failure and in conditions in which potassium retention is present.
- Solutions containing sodium ions should be used with great care, if at all, in patients with congestive heart failure, severe renal insufficiency and in clinical states in which there exist edema with sodium retention.
- In patients with diminished renal function, administration of solutions containing sodium or potassium ions may result in sodium or potassium retention.
- Solutions containing lactate ions should be used with great care in patients with metabolic or respiratory alkalosis as excess administration may result in metabolic alkalosis.
- The risk of solute overload causing congested states with peripheral and pulmonary edema is directly proportional to the electrolyte concentrations of such solutions.
- Do not administer unless solution is clear and container is undamaged. Discard unused portion.

**Drug Interactions** **TOTILAC®** contains Ca++ ions. Precipitation may occur with the addition of anorganic phosphate, hydrogen carbonate or oxalate.

**Carcinogenesis, Mutagenesis**
The active ingredients, potassium chloride, sodium chloride, calcium chloride and sodium lactate are neither carcinogenic nor mutagenic.
Adverse Reactions
Like other IV, reactions which may occur because of the solution or the technique of administration include febrile response, infection at the site of injection, venous thrombosis or phlebitis extending from the site of injection, extravasation and hypervolemia. If an adverse reaction does occur, discontinue the administration, evaluate the patient, institute appropriate therapeutic countermeasure and save the remainder of the fluid for examination if deemed necessary.

Overdosage
There is no overdosage experience with TOTILAC® infusion. No specific antidotes to these preparations are known. Should overdose occur, treat the symptoms and institute appropriate supportive measures as required.

Presentation
Infusion solution in bottle containing 250 ml
Infusion solution in flaxy bag containing 250 ml

Reg. no.

Store at room temperature (25 – 30°C).
ON MEDICAL PRESCRIPTION ONLY

Manufactured by
PT Finusoprima Farma International Bekasi-Indonesia
For
PT KALBE FARMA Tbk, Bekasi – Indonesia.