

## Native Human Carbonic Anhydrase I

Cat. No. NATE-0097

Lot. No. (See product label)

### Introduction

**Description** Carbonic anhydrase is a zinc metalloenzyme that has a molecular weight of approximately 30 kDa. The enzyme catalyzes the hydration of carbon dioxide to carbonic acid. It is involved in vital processes such as pH and CO<sub>2</sub> homeostasis, transport of bicarbonate and CO<sub>2</sub>, biosynthetic reactions, bone resorption, calcification, and tumorigenicity. Therefore, this enzyme is an important target for inhibitors with clinical applications in various pathologies such as glaucoma, epilepsy and Parkinson's disease.

**Applications** Carbonic anhydrase from human erythrocytes (HCA) has been used to study the molten-globule state of carbonic anhydrase (CA). Chaperone-like  $\alpha$ -crystallin binds to this state of the enzyme and prevents its aggregation. The enzyme from Creative Enzymes has been used for the analysis of thermodynamic stability of the enzyme. Furthermore, its clinical significance has been evaluated in human non-small cell lung cancer.

**Synonyms** Carbonic Anhydrase I; carbonate dehydratase; carbonic anhydrase; anhydrase; carbonate anhydrase; carbonic acid anhydrase; carboxyanhydrase; carbonic anhydrase A; carbonate hydro-lyase; EC 4.2.1.1; 9001-03-0; CA-I; CA1

### Product Information

**Species** Human

**Source** Human erythrocytes

**Form** powder

**EC Number** EC 4.2.1.1

**CAS No.** 9001-03-0

**Activity** 100-500 W-A units/mg protein

**Isoelectric point** 6.6

**Pathway** C-MYB transcription factor network, organism-specific biosystem (from Pathway Interaction Database)  
Erythrocytes take up carbon dioxide and release oxygen, organism-specific biosystem (from REACTOME)  
Erythrocytes take up oxygen and release carbon dioxide, organism-specific biosystem (from REACTOME)  
Metabolism, organism-specific biosystem (from REACTOME)

**Function** Myocardial carbonic anhydrase 1/2 activation is significantly elevated in diabetic ischemic cardiomyopathy. may be involved in the pathogenesis of Abdominal aortic aneurysm The new prognostic biomarkers GRP78, Fructose-bisphosphate Aldolase A (ALDOA), Carbonic Anhydrase I (CA1) and Peptidyl-prolyl cis-trans isomerase A or Cyclophilin A (PPIA)) provided good survival prediction for TNM stage I-IV patients. A significant correlation was found between positive carbonic anhydrase I staining and oral squamous cell carcinoma for more advanced clinical stage and larger tumor size, but not for positive lymph node metastasis, distal metastasis, and recurrence.

**Unit Definition** One Wilbur-Anderson (W-A) unit will cause the pH of a 0.02 M Trizma buffer to drop from 8.3 to 6.3 per min at 0°C. (One W-A unit is essentially equivalent to one Roughton-Booth unit.)