ClinicalTrials.gov Protocol and Results Registration System (PRS) Receipt
Release Date: 03/02/2015

ClinicalTrials.gov ID: NCT00500682

Study Identification

Unique Protocol ID:	KRM-306
Brief Title:	A Study of AST-120 for Evaluating Prevention of Progression In Chronic Kidney Disease (EPPIC-1)
Official Title:	A Phase III, Randomized, Double-Blind, Placebo-Controlled Study of AST-120 for Prevention of Chronic Kidney Disease Progression in Patients With Moderate to Severe Chronic Kidney Disease
Secondary IDs:	

Study Status

Record Verification:	March 2015
Overall Status:	Completed
Study Start:	July 2007
Primary Completion:	October 2011 [Actual]
Study Completion:	October 2011 [Actual]

Sponsor/Collaborators

Sponsor:	Mitsubishi Tanabe Pharma Corporation
Responsible Party:	Sponsor
Collaborators:	Kureha Corporation

Oversight

FDA Regulated?:	Yes
Applicable Trial?:	Section 801 Clinical Trial? Yes

	Delayed Posting? No
IND/IDE Protocol?:	Yes
IND/IDE Information:	Grantor: CDER IND/IDE Number: 59,599 Serial Number: 034 Has Expanded Access? No
Review Board:	Approval Status: Board Name: Board Affiliation: Phone: Email:
Data Monitoring?:	Yes
Plan to Share Data?:	
Oversight Authorities:	United States: Food and Drug Administration Canada: Health Canada Russia: Ministry of Health of the Russian Federation Italy: Ministry of Health France: Afssaps - Agence française de sécurité sanitaire des produits de santé (Saint-Denis) Ukraine: Ministry of Health Argentina: Administracion Nacional de Medicamentos, Alimentos y Tecnologia Medica Czech Republic: State Institute for Drug Control Mexico: National Institute of Public Health, Health Secretariat Poland: Ministry of Health Brazil: National Health Surveillance Agency

Study Description

Brief Summary:	1) To evaluate the effectiveness of AST-120 (spherical carbon adsorbent) added to standard-of-care therapy in moderate to severe Chronic Kidney Disease (CKD), on time to first occurrence of any event of the triple composite outcome of initiation of dialysis, kidney transplant or doubling of serum creatinine (sCr) when compared with placebo; 2) To evaluate the safety and tolerability of long-term AST-120 therapy in patients with CKD; 3) To evaluate the effects of AST-120 versus placebo, on other measures of renal function.
Detailed Description:	

Conditions

Conditions:	Chronic Kidney Disease
Keywords:	Kidney Diseases

Study Design

Study Type:	Interventional
Primary Purpose:	Treatment
Study Phase:	Phase 3
Intervention Model:	Parallel Assignment
Number of Arms:	2
Masking:	Double Blind (Subject, Caregiver, Investigator, Outcomes Assessor)
Allocation:	Randomized
Endpoint Classification:	Safety/Efficacy Study
Enrollment:	1020 [Actual]

Arms and Interventions

Arms	Assigned Interventions
Placebo Comparator: Placebo	Drug: Placebo 9g /day (3 times a day)
Experimental: AST-120	Drug: AST-120 9g /day (3 times a day)

Outcome Measures

[See Results Section.]

Eligibility

Minimum Age:	18 Years
Maximum Age:	
Gender:	Both
Accepts Healthy Volunteers?:	No
Criteria:	Inclusion Criteria:

- Age 18 years or older
- Moderate to severe CKD, not anticipated to require dialysis or renal transplant within the next 6 months
- Patient survival expected to be no less than one year

- Serum creatinine in men >= 2.0 mg/dL (>= 177 µmol/L) and <= 5.0 mg/dL (<= 442 µmol/L), and in women >= 1.5 mg/dL (>= 133 µmol/L) and <= 5.0 mg/dL (<= 442 µmol/L) at Screening
- Urinary total protein to urinary total creatinine ratio must be >= 0.5 on a spot void at Screening
- Blood pressure <= 160/90 mmHg at both Screening and Baseline. In addition, blood pressure, if measured, must have been stable in hypertensive patients over the 3 months prior to Screening, with no more than 1 blood pressure reading > 160/90 mmHg
- In patients being treated for hypertension, they should be on a stable anti-hypertensive regimen

Exclusion Criteria:

- Obstructive or reversible cause of kidney disease
- Nephrotic syndrome defined as a ratio of urinary total protein to urinary creatinine of > 6.0 as measured on a spot void
- Adult polycystic kidney disease
- History of previous kidney transplant
- History of recent (within the past 6 months) accelerated or malignant hypertension
- Uncontrolled arrhythmia or severe cardiac disease within the past 6 months
- History of malabsorption, inflammatory bowel disease, hiatal hernia, active peptic ulcer, or severe GI dysmotility, not attributable to the use of a phosphate binder
- Received any investigational agent or participated in a clinical study within the previous 3 months
- Presence of any significant medical condition that might create an undue risk with study participation, or significantly confound the collection of safety and efficacy data in this study

Contacts/Locations

Study Officials: Professor
Study Principal Investigator
Information at Mitsubishi Tanabe Pharma Development America, Inc.

Locations: United States, Arizona
Phoenix, Arizona, United States

United States, Arkansas
Little Rock, Arkansas, United States

United States, California
Alhambra, California, United States

Covina, California, United States

Glendale, California, United States

Los Angeles, California, United States

United States, Connecticut
Stamford, Connecticut, United States

United States, District of Columbia
Washington, District of Columbia, United States

United States, Florida
Hudson, Florida, United States

Miami, Florida, United States

Ocala, Florida, United States

Orlando, Florida, United States

Pembroke Pines, Florida, United States

Spring Hill, Florida, United States

Tampa, Florida, United States

Winter Park, Florida, United States

United States, Kansas
Kansas City, Kansas, United States

United States, Louisiana
New Orleans, Louisiana, United States

Shreveport, Louisiana, United States

United States, Michigan
Ypsilanti, Michigan, United States

United States, Missouri
Kansas City, Missouri, United States

St. Louis, Missouri, United States

United States, New Jersey
Camden, New Jersey, United States

Eatontown, New Jersey, United States

United States, New York
Port Washington, New York, United States

Springfield Gardens, New York, United States

United States, North Carolina

Asheville, North Carolina, United States

United States, Ohio
Cincinnati, Ohio, United States

Dayton, Ohio, United States

Toledo, Ohio, United States

United States, Oregon
Portland, Oregon, United States

United States, Pennsylvania
Philadelphia, Pennsylvania, United States

Pittsburgh, Pennsylvania, United States

United States, South Carolina
Rock Hill, South Carolina, United States

United States, Tennessee
Nashville, Tennessee, United States

United States, Texas
Arlington, Texas, United States

Dallas, Texas, United States

Houston, Texas, United States

San Antonio, Texas, United States

United States, Wisconsin
Appleton, Wisconsin, United States

Oshkosk, Wisconsin, United States

Argentina
Buenos Aires, Argentina

Cordoba, Argentina

San Luis, Argentina

San Pedro, Argentina

Tucuman, Argentina

Brazil
- Barao Geraldo-Campinas, Brazil
- Belo Horizonte Minas Gerais, Brazil
- Juiz de Fora, Brazil
- Porto Alegre, Brazil
- Rio de Janeiro, Brazil
- São Paulo, Brazil
- Taubaté, Brazil

Canada, Manitoba
- Winnipeg, Manitoba, Canada

Canada, Ontario
- Brampton, Ontario, Canada
- Kitzhener, Ontario, Canada
- Oakville, Ontario, Canada
- Scarborough, Ontario, Canada
- Toronto, Ontario, Canada

Canada, Quebec
- Montreal, Quebec, Canada

Czech Republic
- Ceske Budejovice, Czech Republic
- Jihlava, Czech Republic
- Ostrava - Poruba, Czech Republic
- Praha, Czech Republic
- Tabor, Czech Republic

France
- Grenoble, France
- Lyon, France

Nantes, France

Saint-Lo, France

Italy
Bologna, Italy

Brescia, Italy

Como, Italy

Pavia, Italy

Mexico
Aguascalientes, Mexico

Mexico City, Mexico

Tijuana, Mexico

Poland
Gdansk, Poland

Szczecin, Poland

Torun, Poland

Warszawa, Poland

Puerto Rico
Caguas, Puerto Rico

Russian Federation
Bamaul, Russian Federation

Ekaterinburg, Russian Federation

Kazan, Russian Federation

Krasnodar, Russian Federation

Moscow, Russian Federation

Nizhniy Novgorod, Russian Federation

Novosibirsk, Russian Federation

Pyatigorsk, Russian Federation

Ryazan, Russian Federation

Saratov, Russian Federation

Smolensk, Russian Federation

Sochi, Russian Federation

St. Petersburg, Russian Federation

Stavropol, Russian Federation

Ukraine

Chernovtsy, Ukraine

Dnipropetrovsk, Ukraine

Donetsk, Ukraine

Ivano-Frankivsk, Ukraine

Kharkov, Ukraine

Kiev, Ukraine

Odessa, Ukraine

Uzhgorod, Ukraine

Vinnitsa, Ukraine

Zhytomir, Ukraine

References

Citations: [Study Results] Schulman G, Berl T, Beck GJ, Remuzzi G, Ritz E, Arita K, Kato A, Shimizu M. Randomized Placebo-Controlled EPPIC Trials of AST-120 in CKD. J Am Soc Nephrol. 2015 Jul;26(7):1732-46. doi: 10.1681/ASN.2014010042. Epub 2014 Oct 27. PubMed 25349205

Links:

Study Data/Documents:

Participant Flow

Reporting Groups

	Description
AST-120	AST-120: 9g /day (3 times a day)
Placebo	Placebo: 9g /day (3 times a day)

Overall Study

	AST-120	Placebo
Started	510	510
Completed	204	223
Not Completed	306	287
Adverse Event	37	29
Death	25	16
Lost to Follow-up	11	11
Physician Decision	6	10
Pregnancy	2	0
Protocol Violation	1	3
Withdrawal by Subject	80	74
Reaching endpoints, Noncompliance, etc	144	144

Baseline Characteristics

Reporting Groups

	Description
AST-120	AST-120: 9g /day (3 times a day)
Placebo	Placebo: 9g /day (3 times a day)

Baseline Measures

	AST-120	Placebo	Total
Number of Participants	510	510	1020
Age, Continuous [units: years] Mean (Standard Deviation)	56.5 (14.93)	55.8 (14.99)	56.1 (14.95)
Gender, Male/Female [units: participants]			
Female	195	179	374
Male	315	331	646

Outcome Measures

1. Primary Outcome Measure:

Measure Title	Composite of Dialysis Initiation, Kidney Transplantation, and Serum Creatinine Doubling. Number of Participants Meeting the Criteria Are Reported.
Measure Description	
Time Frame	Beyond Week 48, a 12-week visit cycle continued until the end of the study or until individual patients reached an endpoint
Safety Issue?	No

Analysis Population Description

ITT (censored at last contact)

Reporting Groups

	Description
AST-120	AST-120: 9g /day (3 times a day)
Placebo	Placebo: 9g /day (3 times a day)

Measured Values

	AST-120	Placebo
Number of Participants Analyzed	500	502
Composite of Dialysis Initiation, Kidney Transplantation, and Serum Creatinine Doubling. Number of Participants Meeting the Criteria Are Reported.	178	177

	AST-120	Placebo
[units: participants]		

2. Primary Outcome Measure:

Measure Title	Safety and Tolerability
Measure Description	
Time Frame	approximately 42 months
Safety Issue?	Yes

Outcome Measure Data Not Reported

3. Secondary Outcome Measure:

Measure Title	The Development of a Component of a Quadruple Composite Endpoint (Initiation of Dialysis, Kidney Transplant, Doubling of sCr, or Death), Other Measures of Renal Function
Measure Description	
Time Frame	approximately 42 months
Safety Issue?	No

Outcome Measure Data Not Reported

4. Secondary Outcome Measure:

Measure Title	Vitamins and Folate Levels
Measure Description	
Time Frame	approximately 42 months
Safety Issue?	Yes

Outcome Measure Data Not Reported

Reported Adverse Events

Time Frame	[Not specified]

Additional Description	The AE analysis is based on the Safety Population. The Safety Population included all patients who were randomized and received at least 1 dose of study drug. The start number of Participant Flow included all patients who were randomized.

Reporting Groups

	Description
AST-120	AST-120: 9g /day (3 times a day)
Placebo	Placebo: 9g /day (3 times a day)

Serious Adverse Events

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Total	195/507 (38.46%)	184/509 (36.15%)
Blood and lymphatic system disorders		
Anaemia	8/507 (1.58%)	7/509 (1.38%)
Anaemia of chronic disease	1/507 (0.2%)	0/509 (0%)
Iron deficiency anaemia	0/507 (0%)	1/509 (0.2%)
Lymphadenopathy	1/507 (0.2%)	0/509 (0%)
Nephrogenic anaemia	1/507 (0.2%)	0/509 (0%)
Thrombocytopenia	1/507 (0.2%)	0/509 (0%)
Cardiac disorders		
Acute coronary syndrome	5/507 (0.99%)	3/509 (0.59%)
Acute myocardial infarction	7/507 (1.38%)	5/509 (0.98%)
Angina pectoris	5/507 (0.99%)	2/509 (0.39%)
Angina unstable	0/507 (0%)	1/509 (0.2%)
Aortic valve incompetence	1/507 (0.2%)	0/509 (0%)
Arteriosclerosis coronary artery	2/507 (0.39%)	0/509 (0%)
Atrial fibrillation	1/507 (0.2%)	2/509 (0.39%)
Atrial flutter	2/507 (0.39%)	0/509 (0%)
Atrioventricular block complete	1/507 (0.2%)	1/509 (0.2%)
Bradycardia	2/507 (0.39%)	1/509 (0.2%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Bundle branch block left	0/507 (0%)	1/509 (0.2%)
Cardiac failure	3/507 (0.59%)	4/509 (0.79%)
Cardiac failure acute	1/507 (0.2%)	3/509 (0.59%)
Cardiac failure chronic	1/507 (0.2%)	0/509 (0%)
Cardiac failure congestive	11/507 (2.17%)	9/509 (1.77%)
Cardiac valve disease	1/507 (0.2%)	0/509 (0%)
Cardio-respiratory arrest	1/507 (0.2%)	0/509 (0%)
Cardiomyopathy	1/507 (0.2%)	1/509 (0.2%)
Coronary artery disease	3/507 (0.59%)	5/509 (0.98%)
Coronary artery stenosis	0/507 (0%)	1/509 (0.2%)
Left ventricular dysfunction	0/507 (0%)	1/509 (0.2%)
Myocardial infarction	5/507 (0.99%)	1/509 (0.2%)
Myocardial ischaemia	1/507 (0.2%)	0/509 (0%)
Pericarditis	1/507 (0.2%)	0/509 (0%)
Right ventricular failure	2/507 (0.39%)	0/509 (0%)
Sick sinus syndrome	0/507 (0%)	1/509 (0.2%)
Supraventricular tachycardia	1/507 (0.2%)	0/509 (0%)
Tachycardia	1/507 (0.2%)	0/509 (0%)
Ventricular tachyarrhythmia	1/507 (0.2%)	0/509 (0%)
Ventricular tachycardia	0/507 (0%)	1/509 (0.2%)
Ear and labyrinth disorders		
Vertigo	1/507 (0.2%)	0/509 (0%)
Eye disorders		
Blindness	0/507 (0%)	1/509 (0.2%)
Cataract	2/507 (0.39%)	0/509 (0%)
Conjunctival haemorrhage	0/507 (0%)	1/509 (0.2%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Eye haemorrhage	0/507 (0%)	1/509 (0.2%)
Open angle glaucoma	1/507 (0.2%)	0/509 (0%)
Gastrointestinal disorders		
Abdominal pain	1/507 (0.2%)	0/509 (0%)
Abdominal pain upper	0/507 (0%)	1/509 (0.2%)
Constipation	0/507 (0%)	1/509 (0.2%)
Diabetic gastroparesis	0/507 (0%)	1/509 (0.2%)
Diarrhoea	1/507 (0.2%)	1/509 (0.2%)
Duodenal ulcer	1/507 (0.2%)	1/509 (0.2%)
Duodenal ulcer haemorrhage	1/507 (0.2%)	0/509 (0%)
Duodenal ulcer perforation	1/507 (0.2%)	0/509 (0%)
Duodenitis	1/507 (0.2%)	0/509 (0%)
Dyspepsia	1/507 (0.2%)	0/509 (0%)
Food poisoning	0/507 (0%)	1/509 (0.2%)
Gastric haemorrhage	1/507 (0.2%)	0/509 (0%)
Gastric ulcer	0/507 (0%)	2/509 (0.39%)
Gastric ulcer haemorrhage	0/507 (0%)	1/509 (0.2%)
Gastritis	3/507 (0.59%)	4/509 (0.79%)
Gastritis haemorrhagic	1/507 (0.2%)	1/509 (0.2%)
Gastrointestinal haemorrhage	1/507 (0.2%)	3/509 (0.59%)
Gastrooesophageal reflux disease	1/507 (0.2%)	0/509 (0%)
Haemorrhoids	1/507 (0.2%)	0/509 (0%)
Hiatus hernia	1/507 (0.2%)	0/509 (0%)
Ileus	0/507 (0%)	1/509 (0.2%)
Inguinal hernia	0/507 (0%)	1/509 (0.2%)
Intestinal ischaemia	1/507 (0.2%)	0/509 (0%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Nausea	3/507 (0.59%)	0/509 (0%)
Oesophageal spasm	0/507 (0%)	1/509 (0.2%)
Oesophagitis	0/507 (0%)	1/509 (0.2%)
Pancreatic necrosis	1/507 (0.2%)	0/509 (0%)
Pancreatitis chronic	1/507 (0.2%)	0/509 (0%)
Pancreatitis relapsing	1/507 (0.2%)	0/509 (0%)
Peptic ulcer	1/507 (0.2%)	0/509 (0%)
Peptic ulcer haemorrhage	1/507 (0.2%)	0/509 (0%)
Rectal haemorrhage	1/507 (0.2%)	0/509 (0%)
Small intestinal obstruction	0/507 (0%)	1/509 (0.2%)
Upper gastrointestinal haemorrhage	1/507 (0.2%)	0/509 (0%)
Vomiting	3/507 (0.59%)	1/509 (0.2%)
General disorders		
Asthenia	1/507 (0.2%)	0/509 (0%)
Catheter site haemorrhage	1/507 (0.2%)	0/509 (0%)
Catheter site related reaction	0/507 (0%)	1/509 (0.2%)
Chest pain	1/507 (0.2%)	1/509 (0.2%)
Death	0/507 (0%)	1/509 (0.2%)
Generalised oedema	0/507 (0%)	1/509 (0.2%)
Hernia	1/507 (0.2%)	0/509 (0%)
Impaired healing	0/507 (0%)	1/509 (0.2%)
Implant site haematoma	0/507 (0%)	1/509 (0.2%)
Lipogranuloma	1/507 (0.2%)	0/509 (0%)
Non-cardiac chest pain	0/507 (0%)	2/509 (0.39%)
Oedema peripheral	2/507 (0.39%)	0/509 (0%)
Pyrexia	1/507 (0.2%)	1/509 (0.2%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Hepatobiliary disorders		
Cholecystitis acute	0/507 (0%)	1/509 (0.2%)
Cholelithiasis	0/507 (0%)	1/509 (0.2%)
Hepatorenal failure	1/507 (0.2%)	0/509 (0%)
Immune system disorders		
Anaphylactic shock	1/507 (0.2%)	0/509 (0%)
Infections and infestations		
Abscess limb	1/507 (0.2%)	0/509 (0%)
Acute sinusitis	0/507 (0%)	1/509 (0.2%)
Appendicitis	0/507 (0%)	2/509 (0.39%)
Appendicitis perforated	0/507 (0%)	1/509 (0.2%)
Bacterial sepsis	0/507 (0%)	1/509 (0.2%)
Bronchitis	1/507 (0.2%)	2/509 (0.39%)
Bronchopneumonia	0/507 (0%)	1/509 (0.2%)
Catheter site cellulitis	0/507 (0%)	1/509 (0.2%)
Cellulitis	4/507 (0.79%)	3/509 (0.59%)
Cholecystitis infective	1/507 (0.2%)	0/509 (0%)
Chronic sinusitis	0/507 (0%)	1/509 (0.2%)
Device related infection	1/507 (0.2%)	0/509 (0%)
Epiglottitis	1/507 (0.2%)	0/509 (0%)
Erysipelas	1/507 (0.2%)	0/509 (0%)
Furuncle	1/507 (0.2%)	0/509 (0%)
Gangrene	0/507 (0%)	1/509 (0.2%)
Gastritis viral	1/507 (0.2%)	0/509 (0%)
Gastroenteritis	4/507 (0.79%)	4/509 (0.79%)
Gastroenteritis viral	1/507 (0.2%)	0/509 (0%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
H1N1 influenza	1/507 (0.2%)	0/509 (0%)
Herpes zoster	1/507 (0.2%)	0/509 (0%)
Influenza	2/507 (0.39%)	0/509 (0%)
Klebsiella bacteraemia	0/507 (0%)	1/509 (0.2%)
Lobar pneumonia	1/507 (0.2%)	2/509 (0.39%)
Localised infection	0/507 (0%)	1/509 (0.2%)
Lung abscess	1/507 (0.2%)	0/509 (0%)
Lyme disease	1/507 (0.2%)	0/509 (0%)
Osteomyelitis	1/507 (0.2%)	2/509 (0.39%)
Osteomyelitis chronic	0/507 (0%)	1/509 (0.2%)
Pneumonia	13/507 (2.56%)	13/509 (2.55%)
Pneumonia bacterial	1/507 (0.2%)	0/509 (0%)
Pneumonia herpes viral	1/507 (0.2%)	0/509 (0%)
Pneumonia legionella	1/507 (0.2%)	0/509 (0%)
Pyelonephritis	1/507 (0.2%)	2/509 (0.39%)
Pyelonephritis acute	0/507 (0%)	2/509 (0.39%)
Pyelonephritis chronic	1/507 (0.2%)	3/509 (0.59%)
Respiratory tract infection	1/507 (0.2%)	0/509 (0%)
Sepsis	1/507 (0.2%)	1/509 (0.2%)
Sepsis syndrome	1/507 (0.2%)	0/509 (0%)
Streptococcal sepsis	0/507 (0%)	1/509 (0.2%)
Tuberculosis	1/507 (0.2%)	0/509 (0%)
Upper respiratory tract infection	0/507 (0%)	1/509 (0.2%)
Urinary tract infection	1/507 (0.2%)	4/509 (0.79%)
Urosepsis	0/507 (0%)	1/509 (0.2%)
Viral infection	0/507 (0%)	2/509 (0.39%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Injury, poisoning and procedural complications		
Ankle fracture	0/507 (0%)	1/509 (0.2%)
Arteriovenous fistula thrombosis	0/507 (0%)	1/509 (0.2%)
Fall	1/507 (0.2%)	0/509 (0%)
Fibula fracture	0/507 (0%)	1/509 (0.2%)
Heat stroke	0/507 (0%)	1/509 (0.2%)
Ligament sprain	0/507 (0%)	1/509 (0.2%)
Lower limb fracture	1/507 (0.2%)	1/509 (0.2%)
Perirenal haematoma	0/507 (0%)	1/509 (0.2%)
Rib fracture	1/507 (0.2%)	1/509 (0.2%)
Shunt malfunction	0/507 (0%)	1/509 (0.2%)
Subdural haematoma	0/507 (0%)	1/509 (0.2%)
Investigations		
Blood creatinine increased	3/507 (0.59%)	0/509 (0%)
Blood glucose increased	1/507 (0.2%)	0/509 (0%)
Metabolism and nutrition disorders		
Dehydration	2/507 (0.39%)	1/509 (0.2%)
Diabetes mellitus	2/507 (0.39%)	2/509 (0.39%)
Diabetes mellitus inadequate control	2/507 (0.39%)	1/509 (0.2%)
Diabetic foot	2/507 (0.39%)	1/509 (0.2%)
Diabetic ketoacidosis	0/507 (0%)	1/509 (0.2%)
Fluid overload	2/507 (0.39%)	2/509 (0.39%)
Gout	1/507 (0.2%)	0/509 (0%)
Hyperglycaemia	0/507 (0%)	2/509 (0.39%)
Hyperkalaemia	2/507 (0.39%)	5/509 (0.98%)
Hypoglycaemia	5/507 (0.99%)	4/509 (0.79%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Hypoglycaemic seizure	1/507 (0.2%)	0/509 (0%)
Hypokalaemia	0/507 (0%)	1/509 (0.2%)
Hyponatraemia	1/507 (0.2%)	0/509 (0%)
Musculoskeletal and connective tissue disorders		
Back pain	1/507 (0.2%)	2/509 (0.39%)
Gouty arthritis	0/507 (0%)	2/509 (0.39%)
Lumbar spinal stenosis	1/507 (0.2%)	1/509 (0.2%)
Musculoskeletal chest pain	2/507 (0.39%)	0/509 (0%)
Osteoarthritis	0/507 (0%)	1/509 (0.2%)
Osteonecrosis	1/507 (0.2%)	0/509 (0%)
Pseudarthrosis	0/507 (0%)	1/509 (0.2%)
Spinal osteoarthritis	0/507 (0%)	2/509 (0.39%)
Neoplasms benign, malignant and unspecified (incl cysts and polyps)		
Benign duodenal neoplasm	0/507 (0%)	1/509 (0.2%)
Bladder cancer	1/507 (0.2%)	0/509 (0%)
Breast cancer	0/507 (0%)	1/509 (0.2%)
Carcinoid tumour pulmonary	1/507 (0.2%)	0/509 (0%)
Cervix carcinoma stage 0	0/507 (0%)	1/509 (0.2%)
Colon cancer	1/507 (0.2%)	1/509 (0.2%)
Hypopharyngeal cancer	1/507 (0.2%)	0/509 (0%)
Laryngeal cancer	2/507 (0.39%)	0/509 (0%)
Lung adenocarcinoma	1/507 (0.2%)	0/509 (0%)
Lung squamous cell carcinoma stage unspecified	1/507 (0.2%)	0/509 (0%)
Metastatic squamous cell carcinoma	1/507 (0.2%)	0/509 (0%)
Multiple myeloma	0/507 (0%)	1/509 (0.2%)
Prostate cancer	0/507 (0%)	2/509 (0.39%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Sarcoma	0/507 (0%)	1/509 (0.2%)
Testicular seminoma (pure)	0/507 (0%)	1/509 (0.2%)
Nervous system disorders		
Altered state of consciousness	1/507 (0.2%)	0/509 (0%)
Carotid artery stenosis	1/507 (0.2%)	0/509 (0%)
Cerebellar haemorrhage	1/507 (0.2%)	0/509 (0%)
Cerebrovascular accident	4/507 (0.79%)	3/509 (0.59%)
Complex partial seizures	0/507 (0%)	1/509 (0.2%)
Convulsion	0/507 (0%)	1/509 (0.2%)
Dementia	1/507 (0.2%)	0/509 (0%)
Haemorrhage intracranial	0/507 (0%)	1/509 (0.2%)
Haemorrhagic stroke	2/507 (0.39%)	1/509 (0.2%)
Headache	0/507 (0%)	1/509 (0.2%)
Hypoglycaemic coma	0/507 (0%)	1/509 (0.2%)
Ischaemic stroke	1/507 (0.2%)	3/509 (0.59%)
Lumbar radiculopathy	0/507 (0%)	1/509 (0.2%)
Metabolic encephalopathy	1/507 (0.2%)	0/509 (0%)
Syncope	1/507 (0.2%)	3/509 (0.59%)
Transient ischaemic attack	1/507 (0.2%)	1/509 (0.2%)
Uraemic encephalopathy	0/507 (0%)	1/509 (0.2%)
Psychiatric disorders		
Delirium	0/507 (0%)	1/509 (0.2%)
Mental status changes	0/507 (0%)	2/509 (0.39%)
Renal and urinary disorders		
Azotaemia	4/507 (0.79%)	1/509 (0.2%)
Diabetic nephropathy	1/507 (0.2%)	1/509 (0.2%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Glomerulonephritis acute	1/507 (0.2%)	0/509 (0%)
Glomerulonephritis chronic	1/507 (0.2%)	1/509 (0.2%)
Nephropathy toxic	1/507 (0.2%)	0/509 (0%)
Renal failure	4/507 (0.79%)	2/509 (0.39%)
Renal failure acute	9/507 (1.78%)	22/509 (4.32%)
Renal failure chronic	48/507 (9.47%)	45/509 (8.84%)
Renal impairment	3/507 (0.59%)	3/509 (0.59%)
Ureteric stenosis	0/507 (0%)	1/509 (0.2%)
Urinary retention	0/507 (0%)	2/509 (0.39%)
Reproductive system and breast disorders		
Acquired hydrocele	1/507 (0.2%)	0/509 (0%)
Acquired phimosis	1/507 (0.2%)	0/509 (0%)
Benign prostatic hyperplasia	1/507 (0.2%)	0/509 (0%)
Metrorrhagia	0/507 (0%)	2/509 (0.39%)
Polymenorrhoea	0/507 (0%)	1/509 (0.2%)
Scrotal oedema	0/507 (0%)	1/509 (0.2%)
Respiratory, thoracic and mediastinal disorders		
Acute pulmonary oedema	0/507 (0%)	1/509 (0.2%)
Acute respiratory failure	1/507 (0.2%)	2/509 (0.39%)
Aspiration	2/507 (0.39%)	0/509 (0%)
Asthma	1/507 (0.2%)	1/509 (0.2%)
Atelectasis	1/507 (0.2%)	0/509 (0%)
Chronic obstructive pulmonary disease	2/507 (0.39%)	4/509 (0.79%)
Dyspnoea	1/507 (0.2%)	6/509 (1.18%)
Haemoptysis	1/507 (0.2%)	0/509 (0%)
Hydrothorax	1/507 (0.2%)	1/509 (0.2%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Interstitial lung disease	1/507 (0.2%)	0/509 (0%)
Pleural effusion	0/507 (0%)	1/509 (0.2%)
Pneumonia aspiration	1/507 (0.2%)	0/509 (0%)
Pulmonary embolism	0/507 (0%)	3/509 (0.59%)
Pulmonary hypertension	1/507 (0.2%)	1/509 (0.2%)
Pulmonary oedema	2/507 (0.39%)	2/509 (0.39%)
Respiratory distress	0/507 (0%)	2/509 (0.39%)
Respiratory failure	1/507 (0.2%)	2/509 (0.39%)
Skin and subcutaneous tissue disorders		
Drug eruption	1/507 (0.2%)	0/509 (0%)
Neuropathic ulcer	1/507 (0.2%)	0/509 (0%)
Skin ulcer	0/507 (0%)	1/509 (0.2%)
Surgical and medical procedures		
Abortion induced	0/507 (0%)	1/509 (0.2%)
Arteriovenous fistula operation	16/507 (3.16%)	8/509 (1.57%)
Arteriovenous shunt operation	1/507 (0.2%)	0/509 (0%)
Cardiac pacemaker insertion	0/507 (0%)	1/509 (0.2%)
Catheter placement	1/507 (0.2%)	0/509 (0%)
Central venous catheterisation	2/507 (0.39%)	0/509 (0%)
Dialysis device insertion	1/507 (0.2%)	0/509 (0%)
Inguinal hernia repair	1/507 (0.2%)	0/509 (0%)
Insertion of ambulatory peritoneal catheter	2/507 (0.39%)	6/509 (1.18%)
Leg amputation	0/507 (0%)	1/509 (0.2%)
Prosthesis implantation	0/507 (0%)	1/509 (0.2%)
Vascular disorders		
Aortic stenosis	1/507 (0.2%)	0/509 (0%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Arterial stenosis	1/507 (0.2%)	0/509 (0%)
Arterial thrombosis limb	1/507 (0.2%)	0/509 (0%)
Circulatory collapse	0/507 (0%)	1/509 (0.2%)
Deep vein thrombosis	0/507 (0%)	1/509 (0.2%)
Extremity necrosis	0/507 (0%)	1/509 (0.2%)
Femoral arterial stenosis	0/507 (0%)	1/509 (0.2%)
Hypertension	3/507 (0.59%)	1/509 (0.2%)
Hypertensive crisis	5/507 (0.99%)	2/509 (0.39%)
Hypertensive emergency	0/507 (0%)	1/509 (0.2%)
Hypotension	1/507 (0.2%)	0/509 (0%)
Orthostatic hypotension	0/507 (0%)	3/509 (0.59%)
Peripheral ischaemia	1/507 (0.2%)	0/509 (0%)
Thrombophlebitis	0/507 (0%)	1/509 (0.2%)

Other Adverse Events

Frequency Threshold Above Which Other Adverse Events are Reported: 1%

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Total	376/507 (74.16%)	382/509 (75.05%)
Blood and lymphatic system disorders		
Anaemia	58/507 (11.44%)	81/509 (15.91%)
Iron deficiency anaemia	6/507 (1.18%)	5/509 (0.98%)
Cardiac disorders		
Angina pectoris	9/507 (1.78%)	2/509 (0.39%)
Bradycardia	4/507 (0.79%)	8/509 (1.57%)
Endocrine disorders		
Hyperparathyroidism	9/507 (1.78%)	10/509 (1.96%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Hyperparathyroidism secondary	11/507 (2.17%)	17/509 (3.34%)
Eye disorders		
Cataract	14/507 (2.76%)	9/509 (1.77%)
Gastrointestinal disorders		
Abdominal distension	13/507 (2.56%)	10/509 (1.96%)
Abdominal pain	11/507 (2.17%)	15/509 (2.95%)
Abdominal pain upper	13/507 (2.56%)	6/509 (1.18%)
Constipation	42/507 (8.28%)	37/509 (7.27%)
Diarrhoea	29/507 (5.72%)	37/509 (7.27%)
Dyspepsia	12/507 (2.37%)	14/509 (2.75%)
Faeces discoloured	1/507 (0.2%)	6/509 (1.18%)
Flatulence	7/507 (1.38%)	12/509 (2.36%)
Gastritis	6/507 (1.18%)	14/509 (2.75%)
Gastrooesophageal reflux disease	2/507 (0.39%)	8/509 (1.57%)
Nausea	47/507 (9.27%)	42/509 (8.25%)
Vomiting	23/507 (4.54%)	21/509 (4.13%)
General disorders		
Asthenia	17/507 (3.35%)	11/509 (2.16%)
Fatigue	16/507 (3.16%)	24/509 (4.72%)
Oedema	13/507 (2.56%)	9/509 (1.77%)
Oedema peripheral	57/507 (11.24%)	50/509 (9.82%)
Pyrexia	6/507 (1.18%)	8/509 (1.57%)
Immune system disorders		
Seasonal allergy	2/507 (0.39%)	6/509 (1.18%)
Infections and infestations		
Bronchitis	23/507 (4.54%)	16/509 (3.14%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Cellulitis	7/507 (1.38%)	2/509 (0.39%)
Erysipelas	6/507 (1.18%)	1/509 (0.2%)
Gastroenteritis	13/507 (2.56%)	9/509 (1.77%)
Herpes zoster	3/507 (0.59%)	6/509 (1.18%)
Influenza	20/507 (3.94%)	21/509 (4.13%)
Nasopharyngitis	18/507 (3.55%)	17/509 (3.34%)
Pharyngitis	8/507 (1.58%)	9/509 (1.77%)
Pneumonia	4/507 (0.79%)	9/509 (1.77%)
Pyelonephritis chronic	3/507 (0.59%)	8/509 (1.57%)
Respiratory tract infection	16/507 (3.16%)	12/509 (2.36%)
Rhinitis	5/507 (0.99%)	6/509 (1.18%)
Sinusitis	7/507 (1.38%)	12/509 (2.36%)
Upper respiratory tract infection	24/507 (4.73%)	31/509 (6.09%)
Urinary tract infection	37/507 (7.3%)	19/509 (3.73%)
Injury, poisoning and procedural complications		
Ligament sprain	6/507 (1.18%)	1/509 (0.2%)
Investigations		
Blood creatine phosphokinase increased	10/507 (1.97%)	8/509 (1.57%)
Vitamin D decreased	6/507 (1.18%)	6/509 (1.18%)
Metabolism and nutrition disorders		
Acidosis	4/507 (0.79%)	7/509 (1.38%)
Decreased appetite	11/507 (2.17%)	12/509 (2.36%)
Dehydration	4/507 (0.79%)	7/509 (1.38%)
Dyslipidaemia	9/507 (1.78%)	9/509 (1.77%)
Fluid overload	7/507 (1.38%)	1/509 (0.2%)
Gout	24/507 (4.73%)	21/509 (4.13%)

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Hypercalcaemia	8/507 (1.58%)	8/509 (1.57%)
Hypercholesterolaemia	4/507 (0.79%)	8/509 (1.57%)
Hyperglycaemia	13/507 (2.56%)	11/509 (2.16%)
Hyperkalaemia	35/507 (6.9%)	36/509 (7.07%)
Hyperlipidaemia	10/507 (1.97%)	3/509 (0.59%)
Hyperphosphataemia	21/507 (4.14%)	26/509 (5.11%)
Hyperuricaemia	4/507 (0.79%)	8/509 (1.57%)
Hypocalcaemia	6/507 (1.18%)	5/509 (0.98%)
Hypoglycaemia	9/507 (1.78%)	14/509 (2.75%)
Metabolic acidosis	18/507 (3.55%)	27/509 (5.3%)
Vitamin D deficiency	11/507 (2.17%)	12/509 (2.36%)
Musculoskeletal and connective tissue disorders		
Arthralgia	22/507 (4.34%)	23/509 (4.52%)
Back pain	18/507 (3.55%)	22/509 (4.32%)
Muscle spasms	13/507 (2.56%)	18/509 (3.54%)
Musculoskeletal pain	6/507 (1.18%)	9/509 (1.77%)
Myalgia	3/507 (0.59%)	7/509 (1.38%)
Osteoarthritis	10/507 (1.97%)	8/509 (1.57%)
Pain in extremity	16/507 (3.16%)	12/509 (2.36%)
Nervous system disorders		
Dizziness	8/507 (1.58%)	11/509 (2.16%)
Headache	21/507 (4.14%)	12/509 (2.36%)
Psychiatric disorders		
Depression	6/507 (1.18%)	5/509 (0.98%)
Insomnia	8/507 (1.58%)	10/509 (1.96%)
Renal and urinary disorders		

	AST-120	Placebo
	Affected/At Risk (%)	Affected/At Risk (%)
Renal failure acute	5/507 (0.99%)	8/509 (1.57%)
Renal failure chronic	42/507 (8.28%)	55/509 (10.81%)
Renal impairment	10/507 (1.97%)	6/509 (1.18%)
Reproductive system and breast disorders		
Benign prostatic hyperplasia	2/507 (0.39%)	8/509 (1.57%)
Respiratory, thoracic and mediastinal disorders		
Cough	19/507 (3.75%)	15/509 (2.95%)
Dyspnoea	19/507 (3.75%)	12/509 (2.36%)
Epistaxis	7/507 (1.38%)	7/509 (1.38%)
Skin and subcutaneous tissue disorders		
Pruritus	13/507 (2.56%)	21/509 (4.13%)
Rash	7/507 (1.38%)	8/509 (1.57%)
Surgical and medical procedures		
Arteriovenous fistula operation	19/507 (3.75%)	22/509 (4.32%)
Vascular disorders		
Hypertension	55/507 (10.85%)	47/509 (9.23%)
Hypotension	9/507 (1.78%)	14/509 (2.75%)

Limitations and Caveats

[Not specified]

More Information

Certain Agreements:

Principal Investigators are NOT employed by the organization sponsoring the study.

There IS an agreement between the Principal Investigator and the Sponsor (or its agents) that restricts the PI's rights to discuss or publish trial results after the trial is completed.

Results Point of Contact:

Name/Official Title: Clinical Trials, Information Desk
Organization: Mitsubishi Tanabe Pharma Corporation
Phone:
Email: cti-inq-ml@ml.mt-pharma.co.jp