

**Attachment 1: Product information for AusPAR Gefitinib AstraZeneca Pty Ltd PM-2009-02058-3-4 Final 29 June 2010. This Product Information was approved at the time this AusPAR was published.**

IRESSA Product Information  
ONC.000-249.969.7.0

**IRESSA<sup>®</sup>**

gefitinib

## PRODUCT INFORMATION

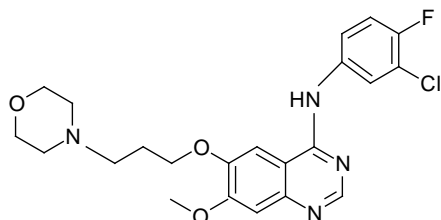
### NAME OF THE MEDICINE

The active ingredient in IRESSA is gefitinib. The chemical name is N-(3-chloro-4-fluorophenyl)-7-methoxy-6-(3-morpholinopropoxy) quinazolin-4-amine.

### DESCRIPTION

IRESSA, gefitinib, is a selective inhibitor of the epidermal growth factor receptor (EGFR) tyrosine kinase.

The chemical structure of gefitinib is:



CAS Number: 184475-35-2  
Molecular formula: C<sub>22</sub>H<sub>24</sub>ClFN<sub>4</sub>O<sub>3</sub>  
Molecular weight: 446.90

Gefitinib is a white powder and a free base. It has pKa's of 5.4 and 7.2 and therefore ionises progressively in solution as the pH falls. Gefitinib can be defined as sparingly soluble at pH 1, but is practically insoluble above pH 7, with the solubility dropping sharply between pH 4 and 6. Gefitinib is achiral.

IRESSA film-coated tablets contain 250 mg of gefitinib. The tablets also contain the following inactive ingredients: lactose monohydrate, microcrystalline cellulose, croscarmellose sodium, povidone, sodium lauryl sulfate, magnesium stearate, hypromellose, macrogol 300, titanium dioxide, iron oxide yellow C177492 and iron oxide red C177491.

### PHARMACOLOGY

Gefitinib is a selective inhibitor of the epidermal growth factor receptor (EGFR) tyrosine kinase, commonly expressed in solid human tumours of epithelial origin. Gefitinib has been demonstrated to inhibit the growth of a wide range of human tumour xenografts in nude mice, to inhibit angiogenesis in xenografts, and to

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increase apoptosis and inhibit invasiveness and secretion of angiogenic factors in human cancer cell lines *in vitro*. In animal or *in vitro* studies, gefitinib has also been demonstrated to enhance the anti-tumour activity of chemotherapy, radiotherapy and hormonal therapy.

## PHARMACOKINETICS

Following intravenous administration, gefitinib is rapidly cleared, extensively distributed and has a mean elimination half-life of 48 hours. Following oral dosing in cancer patients, absorption is moderately slow and the mean terminal half-life is 41 hours. Administration of gefitinib once daily results in a 2 to 8-fold accumulation with steady state exposure achieved after 7 to 10 doses. At steady state, the ratios of  $C_{max}$  to  $C_{min}$  are typically maintained within a 2 to 3-fold range over the 24-hour dosing interval.

### **Absorption**

Following oral administration of IRESSA, peak plasma concentrations of gefitinib typically occur at 3 to 7 hours after dosing. Mean absolute bioavailability is 59% in cancer patients. Exposure to gefitinib is not significantly altered by food.

### **Distribution**

Mean volume of distribution at steady state of gefitinib is 1400 L indicating extensive distribution into tissue. Plasma protein binding is approximately 90%. Gefitinib binds to serum albumin and  $\alpha$ 1-acid glycoprotein.

### **Metabolism**

*In vitro* data indicate that CYP3A4 is the major P450 isozyme involved in the oxidative metabolism of gefitinib. *In vitro* studies have shown that gefitinib has limited potential to inhibit CYP2D6 (see **Interactions with other medicines**).

Three sites of biotransformation have been identified in the metabolism of gefitinib: metabolism of the N-propylmorpholino-group, demethylation of the methoxy-substituent on the quinazoline and oxidative defluorination of the halogenated phenyl group.

The major metabolite identified in human plasma is O-desmethyl gefitinib. It was 14-fold less potent than gefitinib at inhibiting EGFR stimulated cell growth and it is therefore unlikely that it contributes significantly to the clinical activity of gefitinib.

The production of O-desmethyl gefitinib has been shown, *in vitro*, to be via CYP2D6. The role of CYP2D6 in the metabolic clearance of gefitinib has been evaluated in a clinical trial in healthy volunteers genotyped for CYP2D6 status. In poor metabolisers, no measurable levels of O-desmethyl gefitinib were produced. The range of gefitinib exposures achieved in both the extensive and the poor metaboliser groups were wide and overlapping but the mean exposure to gefitinib was 2-fold higher in the poor metaboliser group. The higher average exposures

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that could be achieved by individuals with no active CYP2D6 may be clinically relevant since adverse experiences are related to dose and exposure.

### ***Elimination***

Gefitinib total plasma clearance is approximately 500 mL/min. Excretion is predominantly via the faeces with renal elimination of drug and metabolites accounting for less than 4% of the administered dose.

### **Special populations**

#### ***Population kinetics***

In population based data analyses in cancer patients, no relationships were identified between predicted steady state trough concentration and patient age, body weight, gender, ethnicity or creatinine clearance.

#### ***Hepatic insufficiency***

In a phase I open-label study of single dose gefitinib 250 mg in patients with mild, moderate or severe hepatic impairment due to cirrhosis (according to Child-Pugh classification), there was an increase in exposure in all groups compared with healthy controls. An average 3.1-fold increase in exposure to gefitinib in patients with moderate and severe hepatic impairment was observed. None of the patients had cancer, all had cirrhosis and some had hepatitis. This increase in exposure may be of clinical relevance since adverse experiences are related to dose and exposure to gefitinib.

Gefitinib has been evaluated in a pharmacokinetic study in 31 patients with solid tumours and normal (14 patients), moderate (13 patients) or severe (4 patients) hepatic dysfunction due to liver metastases. It was shown that following daily dosing of 250 mg IRESSA for 28 days, time to steady state, total plasma clearance and steady state exposure ( $C_{\max}^{ss}$ ,  $AUC_{24}^{ss}$ ) were similar for the groups with normal and moderately impaired hepatic function. Data from the 4 patients with severe hepatic dysfunction due to liver metastases suggested that steady state exposures in these patients are also similar to those with normal hepatic function.

#### **Other populations**

Patients that have never smoked, have adenocarcinoma histology, are female gender or are of Asian ethnicity, are associated with a higher rate of EGFR mutation positive tumours

## CLINICAL TRIALS

### Phase III studies

#### IPASS

In a phase III clinical trial conducted in Asia in 1217 patients with advanced (stage IIIB or IV) NSCLC of adenocarcinoma histology who were ex-light (ceased smoking > 15 years ago and smoked < 10 pack years) or never smokers and had not received previous chemotherapy, IRESSA was proven to be superior to carboplatin (AUC 5.0 or 6.0)/paclitaxel (200 mg/m<sup>2</sup>) in terms of Progression Free Survival (PFS) (Hazard Ratio [HR] 0.74, 95% CI 0.65 to 0.85, p<0.0001). Patients were randomised to either IRESSA 250 mg once daily or carboplatin/paclitaxel AUC 5 or 6 mg/mL/min/200mg/m<sup>2</sup> iv every 3 weeks. The effect was not constant over time, initially favouring carboplatin/paclitaxel and then favouring gefitinib, potentially driven by differences in PFS outcomes by EGFR mutation status. EGFR mutation status was a strong predictive biomarker for the effect of gefitinib compared to carboplatin/paclitaxel (see Table 1).

**Table 1 Efficacy outcomes for gefitinib versus carboplatin/paclitaxel from the IPASS study (ITT Population)**

Population	N	PFS <sup>abce</sup>	OS <sup>acde</sup>	ORR [95% CI] <sup>aef</sup>
Overall	1217 (609 vs 608)	HR 0.74 [0.65, 0.85] 5.7 m vs 5.8 m p<0.0001	HR 0.91[0.76, 1.10] 18.6 m vs 17.3 m	43.0 % vs 32.2 % [5.3, 16.1]
EGFR M+	261 (132 vs 129)	HR 0.48 [0.36, 0.64] 9.5 m vs 6.3 m p<0.0001	HR 0.78 [0.50, 1.20] NR vs 19.5 m	71.2 % vs 47.3 % [12.0, 34.9]
EGFR M-	176 (91 vs 85)	HR 2.85 [2.05, 3.98] 1.5 m vs 5.5 m p<0.0001	HR 1.38 [0.92, 2.09] 12.1 m vs 12.6 m	1.1 % vs 23.5 % [-32.5, -13.3]

a Values presented are for gefitinib versus carboplatin/paclitaxel

b Results were similar in the per protocol analysis

c "m" is medians in months. Numbers in square brackets are 95 % confidence intervals for HR

d From early analysis, overall survival follow up is ongoing

e Patients were considered EGFR mutation positive (M+) if one of at least 29 EGFR mutations was detected by Amplification Refractory Mutation System (ARMS) using DxS EGFR 29 mutation detection kit. Patients were deemed EGFR mutation negative (M-) if samples were successfully analysed and none of the 29 EGFR mutations was detected

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f Confidence Intervals (CI) presented are 95% CI for the difference in ORR

NR - Not reached; N - Number of patients randomised; HR - Hazard ratio (hazard ratios <1 favour IRESSA);  
PFS - Progression Free Survival; OS- Overall Survival; ORR - Objective Response Rate; CI -  
Confidence Interval

Quality of life outcomes differed according to EGFR mutation status. In EGFR mutation-positive patients, significantly more IRESSA-treated patients experienced an improvement in quality of life and lung cancer symptoms versus carboplatin/paclitaxel (see Table 2).

**Table 2 Quality of life outcomes for gefitinib versus carboplatin/paclitaxel from the IPASS study**

Population	N	FACT-L QoL <sup>ab</sup> improvement rate (%)	LCS symptom <sup>ab</sup> improvement rate (%)
Overall	1151 (590 vs 561)	48.0 % vs 40.8 % p=0.0148	51.5 % vs 48.5 % p=0.3037
EGFR M+	259 (131 vs 128)	70.2 % vs 44.5 % p<0.0001	75.6 % vs 53.9 % p=0.0003
EGFR M-	169 (89 vs 80)	14.6 % vs 36.3 % p=0.0021	20.2 % vs 47.5 % p=0.0002

Trial outcome index results were supportive of FACT-L and LCS results

- a Values presented are for gefitinib versus carboplatin / paclitaxel
- b Evaluable for QoL analysis: subset of the ITT containing patients with an evaluable baseline QoL assessment and at least 1 evaluable post-baseline QoL assessment.

N - Number of patients evaluable for quality of life analyses; QoL Quality of life; FACT-L Functional assessment of cancer therapy-lung; LCS Lung cancer subscale

**INTEREST**

In a phase III clinical trial of 1466 patients with locally advanced or metastatic NSCLC who had previously received platinum-based chemotherapy and were eligible for further chemotherapy (58% of patients were refractory to previous chemotherapy), IRESSA was proven to be non-inferior to docetaxel (75 mg/m<sup>2</sup>) in terms of overall survival (Hazard Ratio [HR] 1.02, 96%CI [0.91 to 1.15] CI entirely below non-inferiority limit of 1.154, median 7.6 vs 8.0 months), (see Table 3). Patients were randomised to IRESSA 250 mg once daily or docetaxel 75 mg/m<sup>2</sup> iv every 3 weeks.

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**Table 3 Efficacy outcomes for gefitinib versus docetaxel from the INTEREST study**

Population	N <sup>d</sup>	OS <sup>abcd</sup>	PFS <sup>abce</sup>	ORR [95 % CI] <sup>abef</sup>
Overall	1433 (723 vs 710)	HR 1.020 [0.905, 1.150] <sup>c</sup> 7.6 m vs 8.0 m p=0.7332	HR 1.04 [0.93,1.18] 2.2 m vs 2.7 m p=0.4658	9.1 % vs 7.6 % [-1.5 %, 4.5 %]
EGFR M+	44 (22 vs 22)	HR 0.83 [0.41, 1.67] 14.2 m vs 16.6 m p=0.6043	HR 0.16 [0.05, 0.49] 7.0 m vs 4.1 m p=0.0012	42.1 % vs 21.1 % [-8.2 %, 46.0 %]
EGFR M-	253 (119 vs 134)	HR 1.02 [0.78, 1.33] 6.4 m vs 6.0 m p=0.9131	HR 1.24 [0.94,1.64] 1.7 m vs 2.6 m p=0.1353	6.6 % vs 9.8 % [-10.5 %, 4.4 %]

a Values presented are for IRESSA versus docetaxel.

b Results seen in the intention to treat analysis (for overall) were similar

c "m" is medians in months. Numbers in square brackets are 96 % confidence interval for overall survival HR in the overall population, or otherwise 95 % confidence intervals for HR

d Per-protocol analysis for Overall and Intention to treat for EGFR mutation positive and negative

e Evaluable for response: subset of the per-protocol with uni-dimensional measurable disease per the RECIST criteria

f Confidence Intervals (CI) presented are 95% CI for the difference in ORR

NR Not reached; N Number of patients randomised; HR Hazard ratio (hazard ratios <1 favour IRESSA); PFS Progression Free Survival; OS Overall Survival; ORR Objective Response Rate; CI Confidence Interval

The co-primary analysis evaluating the overall survival in 174 patients with high EGFR gene copy number did not demonstrate superiority of IRESSA over docetaxel. Survival outcomes in patients with high EGFR gene copy number were similar for both treatments (HR 1.09, 95% CI 0.78 to 1.51, p=0.6199, median 8.4 vs 7.5 months).

### **ISEL**

The ISEL study was a phase III randomised, double blind, parallel group clinical trial comparing IRESSA 250 mg once daily plus BSC versus placebo plus BSC in 1692 pre-treated patients with locally advanced or metastatic NSCLC who had

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received 1 or 2 prior chemotherapy regimens and were refractory (90%) or intolerant to their most recent regimen (see Table 4).

**Table 4 Efficacy outcomes for IRESSA versus placebo from the ISEL study**

Population	N	OS <sup>abc</sup>	Time to treatment failure <sup>abe</sup> [95% CI]	ORR <sup>adf</sup>
Overall	1692 (1129 vs 563)	HR 0.89 [0.77,1.02] 5.6 m vs 5.1 m p=0.0871	HR 0.82 [0.73, 0.92] 3.0 m vs 2.6 m p=0.0006	8.0 % vs 1.3 % [4.7 %, 8.8 %]
EGFR M+	26 (21 vs 5)	HR NC NR vs 4.3 m	HR 0.79 [0.20, 3.12] 10.8 m vs 3.8m ns	37.5 % vs 0 % [-15.1 %, 61.4 %]
EGFR M-	189 (132 vs 57)	HR 1.16 [0.79, 1.72] 3.7 m vs 5.9 m ns	HR 1.10 [0.78, 1.56] 2.0 m vs 2.6 m ns	2.6 % vs 0 % [-5.6 %, 7.3 %]

a Values presented are for IRESSA versus placebo.

b "m" is medians in months. Numbers in square brackets are 95 % confidence intervals for HR

c Stratified log rank test for overall; otherwise cox proportional hazards model

d Evaluable for response: subset of the per-protocol with uni-dimensional measurable disease per the RECIST criteria

e Intention to treat analysis

f Confidence Intervals (CI) presented are 95% CI for the difference in ORR

N Number of patients randomised; NC Not calculated for overall survival HR as the number of events is too few; NR Not reached; HR Hazard ratio (hazard ratios <1 favour IRESSA); NS – not significant

Exploratory analysis of EGFR biomarkers was statistically inconclusive however response rates in ISEL were higher among IRESSA treated patients with EGFR mutation-positive tumours.

## INDICATIONS

Treatment of patients with locally advanced or metastatic Non Small Cell Lung Cancer (NSCLC) whose tumours express activating mutations of the EGFR tyrosine kinase.



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## **CONTRAINDICATIONS**

Known severe hypersensitivity to the active substance or to any of the excipients of this product.

## **PRECAUTIONS**

### **EGFR mutation assessment**

When assessing the mutation status of a patient it is important that a well-validated and robust methodology is chosen to minimise the possibility of false negative or false positive determinations. In the first line setting, IRESSA should not be used in preference to doublet chemotherapy in mutation-negative patients.

### **Interstitial Lung Disease**

Interstitial Lung Disease (ILD), which may be acute in onset, has been observed in patients receiving IRESSA, and some cases have been fatal. Patients typically have an acute onset of dyspnoea associated with cough, low grade fever, respiratory distress and arterial oxygen desaturation. Symptoms may become severe within a short time. If patients present with worsening of respiratory symptoms such as dyspnoea, cough and fever, IRESSA should be interrupted and prompt investigation initiated. Radiological investigations frequently show pulmonary infiltrates or interstitial shadowing with ground glass appearance. If ILD is confirmed, IRESSA should be discontinued and the patient treated appropriately.

In the placebo-controlled ISEL trial (1692 patients), the incidence of ILD-type events in the overall population was similar and approximately 1% in both treatment arms. The majority of ILD-type event reports were from patients of Oriental ethnicity and the ILD incidence among patients of Oriental ethnicity receiving IRESSA therapy and placebo was similar approximately 3 and 4% respectively. One ILD-type was fatal, and this occurred in a patient receiving placebo.

In the INTEREST trial (1466 patients), the incidence of ILD was 1.4% in the IRESSA group and 1.1% in the docetaxel group. One ILD event was fatal and this occurred in a patient receiving IRESSA.

In the IPASS trial (1217 patients) in Asian patients, the incidence of ILD-type events was 2.6% on the IRESSA treatment arm versus 1.4% on the carboplatin/paclitaxel treatment arm.

In a Japanese Pharmacoepidemiological case control study (see **Adverse Effects**) in 3159 patients with NSCLC who were followed up for 12 weeks when receiving IRESSA or chemotherapy, the following risk factors for developing ILD (irrespective of whether the patient received IRESSA or chemotherapy) were identified: smoking, poor performance status (PS $\geq$ 2), CT scan evidence of reduced normal lung ( $\leq$  50%), recent diagnosis of NSCLC (< 6 months), pre-existing ILD,



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increasing age (> 55 years old) and concurrent cardiac disease. Risk of mortality among patients who developed ILD on both treatments was higher in patients with the following risk factors: smoking, CT scan evidence of reduced normal lung ( $\leq 50\%$ ), pre-existing ILD, increasing age ( $\geq 65$  years old), and extensive areas adherent to pleura ( $\geq 50\%$ ).

### **Liver function**

Liver function test abnormalities (including increases in alanine aminotransferase, aspartate aminotransferase, bilirubin) have been observed (see **Adverse Effects**) uncommonly presenting as hepatitis. There have been isolated reports of hepatic failure which in some cases led to fatal outcomes. Therefore, periodic liver function testing is recommended. IRESSA should be used cautiously in the presence of mild to moderate changes in liver function. Discontinuation should be considered if changes are severe.

### **Renal function**

There have been reports of renal failure secondary to dehydration due to diarrhoea, nausea, vomiting and/or anorexia, or associated with pre-renal factors such as concurrent infections or concomitant medications including chemotherapy. In more severe or persistent cases of diarrhoea, or cases leading to dehydration, particularly in patients with known risk factors (eg renal disease, concurrent vomiting, concomitant medications that impair ability to tolerate dehydration such as NSAIDs and diuretics), IRESSA therapy should be interrupted and appropriate measures taken to intensively rehydrate the patient. In addition, urea, electrolytes and creatinine should be monitored in patients at high risk of dehydration.

### **Cerebrovascular events**

Cerebrovascular events have been reported in clinical studies of IRESSA. A relationship with IRESSA has not been established. An increased risk of cerebral haemorrhage in adult patients with NSCLC receiving IRESSA has not been established

In a phase I/II trial of IRESSA and radiation in paediatric patients, newly diagnosed with brain stem glioma or incompletely resected supratentorial malignant glioma, 4 cases (1 fatal) of CNS haemorrhages were reported from the 45 patients enrolled. A further case of CNS haemorrhage in a child with an ependymoma from a trial with IRESSA alone has been reported.

### **Eye symptoms, severe or persistent diarrhoea, nausea, vomiting or anorexia**

Patients should be advised to seek medical advice promptly in the event of developing any eye symptoms or severe or persistent diarrhoea, nausea, vomiting or anorexia (see **Adverse Effects**). These symptoms should be managed as clinically indicated.

### **Combination cytotoxic therapy**

Randomised controlled trials have demonstrated that IRESSA combined with doublet, platinum-based cytotoxic chemotherapy in advanced NSCLC provides no added benefit over the cytotoxic chemotherapy alone. IRESSA should therefore only be used as monotherapy in advanced NSCLC in patients who have previously received treatment with cytotoxic chemotherapy.

### **Gastrointestinal perforation**

Isolated cases of gastrointestinal perforation have been reported in patients with underlying risk factors (e.g. concomitant medications such as steroids, NSAIDs, underlying history of GI ulceration, age, smoking, bowel metastases at sites of perforation). However, a causal relationship with IRESSA has not been established.

### **Effects on fertility**

Gefitinib given at 20 mg/kg/day (0.7-fold the clinical dose based on body surface area) for 4 weeks prior to mating until day 7 of gestation affected ovulation in female rats, resulting in a reduction in the number of corpora lutea.

### **Use in Pregnancy - Category C**

There are no data from the use of IRESSA in pregnant women. When gefitinib was administered during organogenesis, an increase in the incidence of incomplete ossifications was observed in rats and reduced fetal weights were observed in rabbits at maternally toxic doses. Malformations were not observed in rats; they were observed in rabbits only at a severely maternally toxic dose. Women of childbearing potential must be advised to avoid becoming pregnant while receiving IRESSA therapy.

### **Use in Lactation**

Mothers must be recommended to discontinue breast-feeding while receiving IRESSA therapy.

There are no data from the use of IRESSA in breast-feeding women. It is not known whether gefitinib or its metabolites are excreted in human milk. However, in lactating rats administered 5 mg/kg orally (about 0.2-fold the clinical dose based on body surface area), gefitinib and some metabolites were excreted in milk. When gefitinib was administered to the rat during gestation and lactation, there was a reduction in pup survival at a dose of 20 mg/kg/day (about 0.7-fold the clinical dose based on body surface area).

### **Paediatric use**

IRESSA is not recommended for use in children or adolescents as safety and effectiveness in these patient populations has not been studied.

### **QT interval prolongation**

Data from non-clinical (*in vitro*) studies indicate that gefitinib has the potential to inhibit the cardiac action potential repolarization process (e.g. QT interval). However, safety data obtained from clinical trials and post-marketing surveillance have not suggested any adverse cardiac effects of gefitinib.

### **Carcinogenicity**

A 2-year oral (gavage) carcinogenicity study in rats resulted in a small but statistically significant increase in the incidence of hepatocellular adenomas in both male and female rats and mesenteric lymph node haemangiosarcomas in female rats at the high dose of 10 mg/kg/day. An increased incidence of hepatocellular adenomas was also seen in a 2-year oral (gavage) carcinogenicity study in mice dosed at 50 mg/kg/day and above. The dose of 10 mg/kg/day in rats and 50 mg/kg/day in mice was associated with systemic exposure (based on plasma AUC) of approximately two (2) and three (3) times that anticipated in patients at the recommended clinical dose. The non-effect-dose-level (NOEL) for these effects was 5 mg/kg/day in rats and 10 mg/kg/day in mice, which was associated with systemic exposure of approximately 1.2 and 0.3 times the anticipated value in patients at the recommended clinical dose.

### **Genotoxicity**

There was no evidence for a genotoxic potential of gefitinib in assays for gene mutation (bacteria and mammalian cells *in vitro*) and clastogenicity (mammalian cells *in vitro* and *in vivo* rat micronucleus test).

### **Effects on ability to drive and operate machinery**

During treatment with IRESSA, asthenia has been reported and those patients who experience this symptom should observe caution when driving or using machines.

### **Interactions with other medicines**

*In vitro* studies with human hepatic microsomes have shown that the metabolism of IRESSA is mainly via the CYP3A4 isoform of the hepatic cytochrome P-450 system. IRESSA may be expected to interact with other drugs that induce, inhibit or are metabolised by this system. IRESSA showed little enzyme induction effect in animal studies and *in vitro* studies have shown that IRESSA has limited potential to inhibit CYP2D6.

The clinically or potentially significant clinical drug interactions between IRESSA and the following drugs/drug classes are described below.

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### ***Other drugs that affect IRESSA***

#### *Demonstrated interactions*

##### Medicines that inhibit CYP3A4

Co-administration with itraconazole (a CYP3A4 inhibitor) resulted in an 80% increase in the mean AUC of IRESSA in healthy volunteers. This increase may be clinically relevant since adverse experiences are related to dose and exposure. Although interaction studies with other CYP3A4 inhibitors have not been performed it is expected that drugs such as ketoconazole, clotrimazole, ritonavir would also inhibit IRESSA metabolism.

##### Medicines (e.g. ranitidine) that increase gastric pH

In a trial in healthy volunteers co-administration of ranitidine at a dose that caused sustained elevations in gastric pH,  $\geq 5$ , resulted in a reduced mean IRESSA AUC by 47%. As a consequence, drugs that cause significant sustained elevations in gastric pH may reduce plasma concentrations of IRESSA and therefore may reduce efficacy.

##### *Rifampicin*

Co-administration with rifampicin (a known potent CYP3A4 inducer) in healthy volunteers reduced mean IRESSA AUC by 83% of that without rifampicin.

#### *Theoretical interactions*

##### *Other CYP3A4 inducers*

Substances that are inducers of CYP3A4 activity may increase metabolism and decrease IRESSA plasma concentrations. Therefore, co-medication with CYP3A4 inducers (e.g. phenytoin, carbamazepine, barbiturates or St John's Wort) may reduce efficacy.

### ***Effects of IRESSA on other medicines***

#### *Demonstrated interactions*

##### Medicines metabolised by CYP2D6

In a clinical trial in patients, IRESSA was co-administered with metoprolol (a CYP2D6 substrate). This resulted in a mean 35% increase in exposure to metoprolol. IRESSA may increase the blood concentrations of other co-administered drugs metabolised by CYP2D6.

#### *Theoretical interactions*

##### Warfarin

Although no formal drug interaction study has been conducted, elevations in Internationalised Normal Ratio (INR) and/or bleeding events have been reported in some patients taking warfarin. Consistent with standard anticoagulant therapy practice, patients taking warfarin should be monitored regularly for changes in prothrombin time or INR (see **Adverse Effects**).

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Vinorelbine

Phase II clinical trial data, where IRESSA and vinorelbine have been used concomitantly, indicate that IRESSA may exacerbate the neutropenic effect of vinorelbine.

**ADVERSE EFFECTS**

The most commonly reported adverse drug reactions (ADRs), occurring in more than 20% of the patients receiving IRESSA 250 mg, are diarrhoea, rash, pruritus, dry skin and acne. ADRs usually occur within the first month of therapy and are generally reversible. Approximately 10% of patients had a severe ADR (Common Toxicity Criteria, (CTC) grade 3 or 4). However approximately 3% of patients stopped therapy due to an ADR.

In a phase II trial, Japanese patients experienced a higher frequency of ADRs compared to non-Japanese patients. Because of possible confounding factors in the two patient groups, it is uncertain if this difference is due to ethnic factors.

ADRs have been assigned to the frequency categories where possible based on the incidence of comparable Adverse Event reports in a pooled dataset from the IPASS, ISEL and INTEREST phase III clinical trials (2462 IRESSA-treated patients). In assigning these frequencies no account was taken of the frequency of reports within the comparative treatment groups or whether the investigator considered it to be related to study medication.

Frequencies of occurrence of undesirable effects are defined as: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1,000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); very rare ( $< 1/10,000$ ), not known (cannot be estimated from the available data). Within each frequency grouping, undesirable effects are presented in order of decreasing seriousness.

**Adverse reactions by system organ class and frequency**

System Order Class	Frequency	Event
Metabolism and nutrition disorders	Very Common	Anorexia mild or moderate (CTC grade 1 or 2).
Eye disorders	Common	Conjunctivitis, blepharitis, and dry eye*, mainly mild (CTC grade 1).
	Uncommon	Corneal erosion, reversible and sometimes in association with aberrant eyelash growth.
Vascular disorders	Common	Haemorrhage, such as epistaxis and haematuria.
Respiratory, thoracic and mediastinal disorders	Common	Interstitial lung disease, often severe (CTC grade 3-4). Cases with fatal outcomes

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System Order Class	Frequency	Event
		have been reported.
Gastrointestinal disorders	Very Common	Diarrhoea, mainly mild or moderate (CTC grade 1 or 2).
		Vomiting, mainly mild or moderate (CTC grade 1 or 2).
		Nausea, mainly mild (CTC grade 1).
		Stomatitis, predominantly mild in nature (CTC grade 1).
	Common	Dehydration, secondary to diarrhoea, nausea, vomiting or anorexia, dry mouth, predominantly mild (CTC grade 1).
	Uncommon	Pancreatitis
Hepatobiliary disorders	Very Common	Elevations in alanine aminotransferase, mainly mild to moderate.
	Common	Elevations in aspartate aminotransferase, mainly mild to moderate, elevations in total bilirubin, mainly mild to moderate.
	Uncommon	Hepatitis**
Skin and subcutaneous tissue disorders	Very Common	Skin reactions, mainly a mild or moderate (CTC grade 1 or 2) pustular rash, sometimes itchy with dry skin, including skin fissures on an erythematous base.
	Common	Nail disorder, alopecia
	Uncommon	Allergic reactions***, including angioedema and urticaria
	Rare	Bullous conditions including toxic epidermal necrolysis, Stevens Johnson syndrome, erythema multiforme, and cutaneous vasculitis
Renal and urinary disorders	Common	Asymptomatic laboratory elevations in blood creatinine, proteinuria
General disorders	Very Common	Asthenia, predominantly mild (CTC grade 1).
	Common	Pyrexia

Frequency of ADRs relating to abnormal laboratory values is based on patients with a change in baseline of 2 or more CTC grades in the relevant laboratory parameters.



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\*This event can occur in association with other dry conditions (mainly skin reactions) seen with IRESSA.

\*\*This includes isolated reports of hepatic failure which in some cases led to fatal outcomes

\*\*\*The overall incidence of adverse events of allergic reaction reported in the pooled analysis of the ISEL, INTEREST and IPASS trials was 1.5 % (36 patients). Fourteen of the 36 patients were excluded from the reported frequency as their reports contained evidence of either a non allergic aetiology or that the allergic reaction was the result of treatment with another medicinal product.

In a Post-Marketing Surveillance study in Japan (3350 patients) the reported rate of ILD-type events in patients receiving IRESSA was 5.8%.

## **DOSAGE AND ADMINISTRATION**

The recommended dose of IRESSA is one 250 mg tablet once a day, taken with or without food. If a dose of IRESSA is missed, it should be taken as soon as the patient remembers. If it is less than 12 hours to the next dose, the patient should not take the missed dose. Patients should not take a double dose (two doses at the same time) to make up for a forgotten dose.

Where dosing of whole tablets is not possible, such as patients who are only able to swallow liquids, tablets may be administered as a dispersion in water. The tablet should be dropped into half a glass of drinking water (non-carbonated), without crushing, and the glass stirred until the tablet has dispersed (approximately 15 minutes) and the contents subsequently drunk immediately. The glass should be rinsed with a further half glass of water and the contents drunk. The liquid can also be administered via a nasogastric tube.

### **Dosage adjustment**

No dosage adjustment is required on the basis of patient age, body weight, gender, ethnicity, renal function or in patients with moderate to severe hepatic impairment due to liver metastases. Gefitinib exposure is increased in patients with moderate to severe hepatic impairment due to cirrhosis or hepatitis (**see Pharmacology – Hepatic insufficiency**). These patients should be closely monitored for adverse events.

Patients with poorly tolerated diarrhoea or skin adverse drug reactions may be successfully managed by providing a brief (up to 14 days) therapy interruption followed by reinstatement of the 250 mg dose.

## **OVERDOSAGE**

There is no specific treatment in the event of overdose of IRESSA. In phase I clinical trials, a limited number of patients were treated with daily doses of up to 1000 mg. An increase of frequency and severity of some adverse reactions was observed, mainly diarrhoea and skin rash. Adverse reactions associated with



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overdose should be treated symptomatically; in particular severe diarrhoea should be managed as clinically indicated.

## **PRESENTATION AND STORAGE CONDITIONS**

Available in blister packs of 30 tablets.

IRESSA 250 mg tablets are brown, round, biconvex, film-coated tablets impressed with *IRESSA 250* on one side and plain on the other.

Store below 30°C.

## **POISON SCHEDULE OF THE MEDICINE**

S4 (Prescription Only Medicine).

## **NAME AND ADDRESS OF THE SPONSOR**

AstraZeneca Pty Ltd  
ABN 54 009 682 311  
Alma Road  
NORTH RYDE NSW 2113

## **DATE OF APPROVAL**

Date of TGA approval – 29 June 2010

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