

ANNEX I

SUMMARY OF PRODUCT CHARACTERISTICS

1. NAME OF THE MEDICINAL PRODUCT

Rasagiline ratiopharm 1 mg tablets

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each tablet contains 1 mg rasagiline (as mesilate).

For the full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM

Tablet

White to off-white, round, flat, bevelled tablets, debossed with “GIL” and “1” underneath on one side and plain on the other side.

4. CLINICAL PARTICULARS

4.1 Therapeutic indications

Rasagiline ratiopharm is indicated in adults for the treatment of idiopathic Parkinson’s disease as monotherapy (without levodopa) or as adjunct therapy (with levodopa) in patients with end of dose fluctuations.

4.2 Posology and method of administration

Posology

The recommended dose of rasagiline is 1 mg (one tablet of Rasagiline ratiopharm) once daily, to be taken with or without levodopa.

Elderly

No change in dose is required for elderly patients (see section 5.2).

Hepatic impairment

Rasagiline is contraindicated in patients with severe hepatic impairment (see section 4.3). Rasagiline use in patients with moderate hepatic impairment should be avoided. Caution should be used when initiating treatment with rasagiline in patients with mild hepatic impairment. In case patients progress from mild to moderate hepatic impairment rasagiline should be stopped (see section 4.4 and 5.2).

Renal impairment

No special precautions are required in patients with renal impairment.

Paediatric population

The safety and efficacy of Rasagiline ratiopharm in children and adolescents have not been established. There is no relevant use of Rasagiline ratiopharm in the paediatric population in the indication Parkinson’s disease.

Method of administration

For oral use.

Rasagiline ratiopharm may be taken with or without food.

4.3 Contraindications

Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.

Concomitant treatment with other monoamine oxidase (MAO) inhibitors (including medicinal and natural products without prescription e.g. St. John's Wort) or pethidine (see section 4.5). At least 14 days must elapse between discontinuation of rasagiline and initiation of treatment with MAO inhibitors or pethidine.

Severe hepatic impairment.

4.4 Special warnings and precautions for use

Concomitant use of rasagiline with other medicinal products

The concomitant use of rasagiline and fluoxetine or fluvoxamine should be avoided (see section 4.5). At least five weeks should elapse between discontinuation of fluoxetine and initiation of treatment with rasagiline. At least 14 days should elapse between discontinuation of rasagiline and initiation of treatment with fluoxetine or fluvoxamine.

The concomitant use of rasagiline and dextromethorphan or sympathomimetics such as those present in nasal and oral decongestants or cold medicinal product containing ephedrine or pseudoephedrine is not recommended (see section 4.5).

Concomitant use of rasagiline and levodopa

Since rasagiline potentiates the effects of levodopa, the adverse reactions of levodopa may be increased and pre-existing dyskinesia exacerbated. Decreasing the dose of levodopa may ameliorate this adverse reaction.

There have been reports of hypotensive effects when rasagiline is taken concomitantly with levodopa. Patients with Parkinson's disease are particularly vulnerable to the adverse reactions of hypotension due to existing gait issues.

Dopaminergic effects

Excessive daytime sleepiness (EDS) and sudden sleep onset (SOS) episodes

Rasagiline may cause daytime drowsiness, somnolence, and, occasionally, especially if used with other dopaminergic medicinal products - falling asleep during activities of daily living. Patients must be informed of this and advised to exercise caution while driving or operating machines during treatment with rasagiline. Patients who have experienced somnolence and/or an episode of sudden sleep onset must refrain from driving or operating machines (see section 4.7).

Impulse control disorders (ICDs)

ICDs can occur in patients treated with dopamine agonists and/or dopaminergic treatments. Similar reports of ICDs have also been received post-marketing with rasagiline. Patients should be regularly monitored for the development of impulse control disorders. Patients and carers should be made aware of the behavioural symptoms of impulse control disorders that were observed in patients treated with rasagiline, including cases of compulsions, obsessive thoughts, pathological gambling, increased libido, hypersexuality, impulsive behaviour and compulsive spending or buying.

Melanoma

During the clinical development program, the occurrence of cases of melanoma prompted the consideration of a possible association with rasagiline. The data collected suggests that Parkinson's disease, and not any medicinal products in particular, is associated with a higher risk of skin cancer (not exclusively melanoma). Any suspicious skin lesion should be evaluated by a specialist.

Hepatic impairment

Caution should be used when initiating treatment with rasagiline in patients with mild hepatic impairment. Rasagiline use in patients with moderate hepatic impairment should be avoided. In case patients progress from mild to moderate hepatic impairment, rasagiline should be stopped (see section 5.2).

4.5 Interaction with other medicinal products and other forms of interaction

MAO Inhibitors

Rasagiline is contraindicated along with other MAO inhibitors (including medicinal and natural products without prescription e.g. St. John's Wort) as there may be a risk of non-selective MAO inhibition that may lead to hypertensive crises (see section 4.3).

Pethidine

Serious adverse reactions have been reported with the concomitant use of pethidine and MAO inhibitors including another selective MAO-B inhibitor. The concomitant administration of rasagiline and pethidine is contraindicated (see section 4.3).

Sympathomimetics

With MAO inhibitors there have been reports of medicinal product interactions with the concomitant use of sympathomimetic medicinal products. Therefore, in view of the MAO inhibitory activity of rasagiline, concomitant administration of rasagiline and sympathomimetics such as those present in nasal and oral decongestants or cold medicinal products, containing ephedrine or pseudoephedrine, is not recommended (see section 4.4).

Dextromethorphan

There have been reports of medicinal product interactions with the concomitant use of dextromethorphan and non-selective MAO inhibitors. Therefore, in view of the MAO inhibitory activity of rasagiline, the concomitant administration of rasagiline and dextromethorphan is not recommended (see section 4.4).

SNRI/SSRI/tri- and tetracyclic antidepressants

The concomitant use of rasagiline and fluoxetine or fluvoxamine should be avoided (see section 4.4).

For concomitant use of rasagiline with selective serotonin reuptake inhibitors (SSRIs)/selective serotonin-norepinephrine reuptake inhibitors (SNRIs) in clinical trials, see section 4.8.

Serious adverse reactions have been reported with the concomitant use of SSRIs, SNRIs, tricyclic/tetracyclic antidepressants and MAO inhibitors. Therefore, in view of the MAO inhibitory activity of rasagiline, antidepressants should be administered with caution.

Agents that affect CYP1A2 activity

In vitro metabolism studies have indicated that cytochrome P450 1A2 (CYP1A2) is the major enzyme responsible for the metabolism of rasagiline.

CYP1A2 inhibitors

Co-administration of rasagiline and ciprofloxacin (an inhibitor of CYP1A2) increased the AUC of rasagiline by 83%. Co-administration of rasagiline and theophylline (a substrate of CYP1A2) did not affect the pharmacokinetics of either product. Thus, potent CYP1A2 inhibitors may alter rasagiline plasma levels and should be administered with caution.

CYP1A2 inducers

There is a risk that the plasma levels of rasagiline in smoking patients could be decreased, due to induction of the metabolising enzyme CYP1A2.

Other cytochrome P450 isoenzymes

In vitro studies showed that rasagiline at a concentration of 1 µg/ml (equivalent to a level that is 160 times the average C_{max} ~ 5.9-8.5 ng/ml in Parkinson's disease patients after 1 mg rasagiline multiple dosing), did not inhibit cytochrome P450 isoenzymes, CYP1A2, CYP2A6, CYP2C9, CYP2C19, CYP2D6, CYP2E1, CYP3A4 and CYP4A. These results indicate that rasagiline's therapeutic concentrations are unlikely to cause any clinically significant interference with substrates of these enzymes (see section 5.3).

Levodopa and other Parkinson's disease medicinal products

In Parkinson's disease patients receiving rasagiline as adjunct therapy to chronic levodopa treatment, there was no clinically significant effect of levodopa treatment on rasagiline clearance.

Concomitant administration of rasagiline and entacapone increased rasagiline oral clearance by 28%.

Tyramine/rasagiline interaction

Results of five tyramine challenge studies (in volunteers and Parkinson's disease patients), together with results of home monitoring of blood pressure after meals (of 464 patients treated with 0.5 or 1 mg/day of rasagiline or placebo as adjunct therapy to levodopa for six months without tyramine restrictions), and the fact that there were no reports of tyramine/rasagiline interaction in clinical studies conducted without tyramine restriction, indicate that rasagiline can be used safely without dietary tyramine restrictions.

4.6 Fertility, pregnancy and lactation

Pregnancy

There are no data from the use of rasagiline in pregnant women. Animal studies do not indicate direct or indirect harmful effects with respect to reproductive toxicity (see section 5.3). As a precautionary measure, it is preferable to avoid the use of rasagiline during pregnancy.

Breast-feeding

Non-clinical data indicate that rasagiline inhibits prolactin secretion and thus, may inhibit lactation. It is not known whether rasagiline is excreted in human milk. Caution should be exercised when rasagiline is administered to a breast-feeding mother.

Fertility

No human data on the effect of rasagiline on fertility are available. Non-clinical data indicate that rasagiline has no effect on fertility.

4.7 Effects on ability to drive and use machines

In patients experiencing somnolence/sudden sleep episodes, rasagiline may have major influence on the ability to drive and use machines.

Patients should be cautioned about operating hazardous machines, including motor vehicles, until they are reasonably certain that rasagiline does not affect them adversely.

Patients being treated with rasagiline and presenting with somnolence and/or sudden sleep episodes must be informed to refrain from driving or engaging in activities where impaired alertness may put themselves or others at risk of serious injury or death (e.g. operating machines) until they have gained sufficient

experience with rasagiline and other dopaminergic medications to gauge whether or not it affects their mental and/or motor performance adversely.

If increased somnolence or new episodes of falling asleep during activities of daily living (e.g. watching television, passenger in a car, etc.) are experienced at any time during treatment, the patients should not drive or participate in potentially dangerous activities.

Patients should not drive, operate machinery, or work at heights during treatment if they have previously experienced somnolence and/or have fallen asleep without warning prior to use of rasagiline.

Patients should be cautioned about possible additive effects of sedating medicinal products, alcohol, or other central nervous system depressants (e.g. benzodiazepines, antipsychotics, antidepressants) in combination with rasagiline, or when taking concomitant medications that increase plasma levels of rasagiline (e.g. ciprofloxacin) (see section 4.4).

4.8 Undesirable effects

Summary of the safety profile

In clinical studies in Parkinson's disease patients the most commonly reported adverse reactions were: headache, depression, vertigo, and flu (influenza and rhinitis) in monotherapy; dyskinesia, orthostatic hypotension, fall, abdominal pain, nausea and vomiting, and dry mouth in adjunct to levodopa therapy; musculoskeletal pain as back and neck pain, and arthralgia in both regimens. These adverse reactions were not associated with an elevated rate of drug discontinuation.

Tabulated list of adverse reactions

Adverse reactions are listed below in Tables 1 and 2 by system organ class and frequency using the following conventions: 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).

Monotherapy

The tabulated list below includes adverse reactions which were reported with a higher incidence in placebo-controlled studies, in patients receiving 1 mg/day rasagiline.

System Organ Class	Very common	Common	Uncommon	Not known
Infections and infestations		Influenza		
Neoplasms benign, malignant and unspecified (including cysts and polyps)		Skin carcinoma		
Blood and lymphatic system disorders		Leucopenia		
Immune system disorders		Allergy		
Metabolism and nutrition disorders			Decreased appetite	
Psychiatric disorders		Depression, Hallucinations*		Impulse control disorders*
Nervous system disorders	Headache		Cerebrovascular accident	Serotonin syndrome*,

System Organ Class	Very common	Common	Uncommon	Not known
				Excessive daytime sleepiness (EDS) and sudden sleep onset (SOS) episodes*
Eye disorders		Conjunctivitis		
Ear and labyrinth disorders		Vertigo		
Cardiac disorders		Angina pectoris	Myocardial infarction	
Vascular disorders				Hypertension*
Respiratory, thoracic and mediastinal disorders		Rhinitis		
Gastrointestinal disorders		Flatulence		
Skin and subcutaneous tissue disorders		Dermatitis	Vesiculobullous rash	
Musculoskeletal and connective tissue disorders		Musculoskeletal pain, Neck pain, Arthritis		
Renal and urinary disorders		Urinary urgency		
General disorders and administration site conditions		Fever, Malaise		
*See section description of selected adverse reactions				

Adjunct Therapy

The tabulated list below includes adverse reactions which were reported with a higher incidence in placebo-controlled studies in patients receiving 1 mg/day rasagiline.

System Organ Class	Very common	Common	Uncommon	Not known
Neoplasms benign, malignant and unspecified			Skin melanoma*	
Metabolism and nutrition disorders		Decreased appetite		
Psychiatric disorders		Hallucinations*, Abnormal dreams	Confusion	Impulse control disorders*
Nervous system disorders	Dyskinesia	Dystonia, Carpal tunnel syndrome, Balance disorder	Cerebrovascular accident	Serotonin syndrome*, Excessive daytime sleepiness (EDS) and sudden sleep

System Organ Class	Very common	Common	Uncommon	Not known
				onset (SOS) episodes*
Cardiac disorders			Angina pectoris	
Vascular disorders		Orthostatic hypotension*		Hypertension*
Gastrointestinal disorders		Abdominal pain, Constipation, Nausea and vomiting, Dry mouth		
Skin and subcutaneous tissue disorders		Rash		
Musculoskeletal and connective tissue disorders*		Arthralgia, Neck pain		
Investigations		Decreased weight		
Injury, poisoning and procedural complications		Fall		
*See section description of selected adverse reactions				

Description of selected adverse reactions

Orthostatic hypotension

In blinded placebo-controlled studies, severe orthostatic hypotension was reported in one subject (0.3%) in the rasagiline arm (adjunct studies), none in the placebo arm. Clinical trial data further suggest that orthostatic hypotension occurs most frequently in the first two months of rasagiline treatment and tends to decrease over time.

Hypertension

Rasagiline selectively inhibits MAO-B and is not associated with increased tyramine sensitivity at the indicated dose (1 mg/day). In blinded placebo-controlled studies (monotherapy and adjunct) severe hypertension was not reported in any subjects in the rasagiline arm. In the post-marketing period, cases of elevated blood pressure, including rare serious cases of hypertensive crisis associated with ingestion of unknown amounts of tyramine-rich foods, have been reported in patients taking rasagiline. In post-marketing period, there was one case of elevated blood pressure in a patient using the ophthalmic vasoconstrictor tetrahydrozoline hydrochloride while taking rasagiline.

Impulse control disorders

One case of hypersexuality was reported in monotherapy placebo-controlled study. The following were reported during post-marketing exposure with unknown frequency: compulsions, compulsive shopping, dermatillomania, dopamine dysregulation syndrome, impulse-control disorder, impulsive behaviour, kleptomania, theft, obsessive thoughts, obsessive-compulsive disorder, stereotypy, gambling, pathological gambling, libido increased, hypersexuality, psychosexual disorder, sexually inappropriate behaviour. Half of the reported ICD cases were assessed as serious. Only single cases of reported cases had not recovered at the time they were reported.

Excessive daytime sleepiness (EDS) and sudden sleep onset (SOS) episodes

Excessive daily sleepiness (hypersomnia, lethargy, sedation, sleep attacks, somnolence, sudden onset of sleep) can occur in patients treated with dopamine agonists and/or other dopaminergic treatments. A similar pattern of excessive daily sleepiness has been reported post-marketing with rasagiline. Cases of patients, treated with rasagiline and other dopaminergic medicinal products, falling asleep while engaged in activities of daily living have been reported. Although many of these patients reported

somnolence while on rasagiline with other dopaminergic medicinal products, some perceived that they had no warning signs, such as excessive drowsiness, and believed that they were alert immediately prior to the event. Some of these events have been reported more than 1-year after initiation of treatment.

Hallucinations

Parkinson's disease is associated with symptoms of hallucinations and confusion. In post-marketing experience, these symptoms have also been observed in Parkinson's disease patients treated with rasagiline.

Serotonin syndrome

Rasagiline clinical trials did not allow concomitant use of fluoxetine or fluvoxamine with rasagiline, but the following antidepressants and doses were allowed in the rasagiline trials: amitriptyline \leq 50 mg/daily, trazodone \leq 100 mg/daily, citalopram \leq 20 mg/daily, sertraline \leq 100 mg/daily, and paroxetine \leq 30 mg/daily (see section 4.5).

In the post-marketing period, cases of potentially life-threatening serotonin syndrome associated with agitation, confusion, rigidity, pyrexia and myoclonus have been reported by patients treated with antidepressants, meperidine, tramadol, methadone, or propoxyphene concomitantly with rasagiline.

Malignant melanoma

Incidence of skin melanoma in placebo-controlled clinical studies was 2/380 (0.5%) in rasagiline 1 mg as adjunct to levodopa therapy group vs. 1/388 (0.3%) incidence in placebo group. Additional cases of malignant melanoma were reported during post-marketing period. These cases were considered serious in all reports.

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via **the national reporting system listed in [Appendix V](#)**.

4.9 Overdose

Symptoms

Symptoms reported following overdose of rasagiline in doses ranging from 3 mg to 100 mg included hypomania, hypertensive crisis and serotonin syndrome.

Overdose can be associated with significant inhibition of both MAO-A and MAO-B. In a single-dose study healthy volunteers received 20 mg/day and in a ten-day study healthy volunteers received 10 mg/day. Adverse reactions were mild or moderate and not related to rasagiline treatment. In a dose escalation study in patients on chronic levodopa therapy treated with 10 mg/day of rasagiline, there were reports of cardiovascular adverse reactions (including hypertension and postural hypotension) which resolved following treatment discontinuation. These symptoms may resemble those observed with non-selective MAO inhibitors.

Management

There is no specific antidote. In case of overdose, patients should be monitored and the appropriate symptomatic and supportive therapy instituted.

5. PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Anti-Parkinson-Drugs, monoamine oxidase -B inhibitors, ATC code: N04BD02

Mechanism of action

Rasagiline was shown to be a potent, irreversible MAO-B selective inhibitor, which may cause an increase in extracellular levels of dopamine in the striatum. The elevated dopamine level and subsequent increased dopaminergic activity are likely to mediate rasagiline's beneficial effects seen in models of dopaminergic motor dysfunction.

1-Aminoindan is an active major metabolite and it is not a MAO-B inhibitor.

Clinical efficacy and safety

The efficacy of rasagiline was established in three studies: as monotherapy treatment in study I and as adjunct therapy to levodopa in the studies II and III.

Monotherapy

In study I, 404 patients were randomly assigned to receive placebo (138 patients), rasagiline 1 mg/day (134 patients) or rasagiline 2 mg/day (132 patients) and were treated for 26 weeks, there was no active comparator.

In this study, the primary measure of efficacy was the change from baseline in the total score of the Unified Parkinson's Disease Rating Scale (UPDRS, parts I-III). The difference between the mean change from baseline to week 26/termination (LOCF, Last Observation Carried Forward) was statistically significant (UPDRS, parts I-III: for rasagiline 1 mg compared to placebo -4.2, 95% CI [-5.7, -2.7]; $p < 0.0001$; for rasagiline 2 mg compared to placebo -3.6, 95% CI [-5.0, -2.1]; $p < 0.0001$, UPDRS Motor, part II: for rasagiline 1 mg compared to placebo -2.7, 95% CI [-3.87, -1.55], $p < 0.0001$; for rasagiline 2 mg compared to placebo -1.68, 95% CI [-2.85, -0.51], $p = 0.0050$). The effect was evident, although its magnitude was modest in this patient population with mild disease. There was a significant and beneficial effect in quality of life (as assessed by PD-QUALIF scale).

Adjunct therapy

In study II, patients were randomly assigned to receive placebo (229 patients), or rasagiline 1 mg/day (231 patients) or the catechol-O-methyl transferase (COMT) inhibitor, entacapone, 200 mg taken along with scheduled doses of levodopa (LD)/decarboxylase inhibitor (227 patients), and were treated for 18 weeks. In study III, patients were randomly assigned to receive placebo (159 patients), rasagiline 0.5 mg/day (164 patients), or rasagiline 1 mg/day (149 patients), and were treated for 26 weeks.

In both studies, the primary measure of efficacy was the change from baseline to treatment period in the mean number of hours that were spent in the "OFF" state during the day (determined from "24-hour" home diaries completed for 3 days prior to each of the assessment visits).

In study II, the mean difference in the number of hours spent in the "OFF" state compared to placebo was -0.78h, 95% CI [-1.18, -0.39], $p = 0.0001$. The mean total daily decrease in the OFF time was similar in the entacapone group (-0.80h, 95% CI [-1.20, -0.41], $p < 0.0001$) to that observed in the rasagiline 1 mg group. In study III, the mean difference compared to placebo was -0.94h, 95% CI [-1.36, -0.51], $p < 0.0001$. There was also a statistically significant improvement over placebo with the rasagiline 0.5 mg group, yet the magnitude of improvement was lower. The robustness of the results for the primary efficacy endpoint, was confirmed in a battery of additional statistical models and was demonstrated in three cohorts (ITT, per protocol and completers).

The secondary measures of efficacy included global assessments of improvement by the examiner, Activities of Daily Living (ADL) subscale scores when OFF and UPDRS motor while ON. Rasagiline produced statistically significant benefit compared to placebo.

5.2 Pharmacokinetic properties

Absorption

Rasagiline is rapidly absorbed, reaching peak plasma concentration (C_{\max}) in approximately 0.5 hours. The absolute bioavailability of a single rasagiline dose is about 36%. Food does not affect the T_{\max} of rasagiline, although C_{\max} and exposure (AUC) are decreased by approximately 60% and 20%, respectively, when the medicinal product is taken with a high fat meal. Because AUC is not substantially affected, rasagiline can be administered with or without food.

Distribution

The mean volume of distribution following a single intravenous dose of rasagiline is 243 l. Plasma protein binding following a single oral dose of ^{14}C -labelled rasagiline is approximately 60 to 70%.

Biotransformation

Rasagiline undergoes almost complete biotransformation in the liver prior to excretion. The metabolism of rasagiline proceeds through two main pathways: N-dealkylation and/or hydroxylation to yield: 1-aminoindan, 3-hydroxy-N-propargyl-1 aminoindan and 3-hydroxy-1-aminoindan. *In vitro* experiments indicate that both routes of rasagiline metabolism are dependent on cytochrome P450 system, with CYP1A2 being the major iso-enzyme involved in rasagiline metabolism. Conjugation of rasagiline and its metabolites was also found to be a major elimination pathway to yield glucuronides. *Ex vivo* and *in vitro* experiments demonstrate that rasagiline is neither inhibitor nor inducer of major CYP450 enzymes (see section 4.5).

Elimination

After oral administration of ^{14}C -labelled rasagiline, elimination occurred primarily via urine (62.6%) and secondarily via faeces (21.8%), with a total recovery of 84.4% of the dose over a period of 38 days. Less than 1% of rasagiline is excreted as unchanged product in urine.

Linearity/non-linearity

Rasagiline pharmacokinetics is linear with dose over the range of 0.5-2 mg in Parkinson's disease patients. Its terminal half-life is 0.6-2 hours.

Hepatic impairment

In subjects with mild hepatic impairment, AUC and C_{\max} were increased by 80% and 38%, respectively. In subjects with moderate hepatic impairment, AUC and C_{\max} were increased by 568% and 83%, respectively (see section 4.4).

Renal impairment

Rasagiline's pharmacokinetics characteristics in subjects with mild (CL_{Cr} 50-80 ml/min) and moderate (CL_{Cr} 30-49 ml/min) renal impairment were similar to healthy subjects.

Elderly

Age has little influence on rasagiline pharmacokinetics in the elderly (> 65 years) (see section 4.2)

5.3 Preclinical safety data

Non-clinical data reveal no special hazard for humans based on the standard studies of safety pharmacology, repeated dose toxicity, genotoxicity, carcinogenicity, reproduction and development.

Rasagiline did not present genotoxic potential *in vivo* and in several *in vitro* systems using bacteria or hepatocytes. In the presence of metabolite activation rasagiline induced an increase of chromosomal aberrations at concentrations with excessive cytotoxicity which are unattainable at the clinical conditions of use.

Rasagiline was not carcinogenic in rats at systemic exposure, 84 – 339 times the expected plasma exposures in humans at 1 mg/day. In mice, increased incidences of combined bronchiolar/alveolar adenoma and/or carcinoma were observed at systemic exposures, 144 – 213 times the expected plasma exposure in humans at 1 mg/day.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Mannitol
Maize starch
Pregelatinised maize starch
Colloidal anhydrous silica
Stearic acid
Talc

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

Blisters: 3 years
Bottles: 3 years

6.4 Special precautions for storage

Do not store above 30°C.

6.5 Nature and contents of container

Blisters

Aluminium/aluminium blister packs of 7, 10, 28, 30, 100 or 112 tablets.
Aluminium/aluminium perforated unit dose blister packs of 10 x 1, 30 x 1 and 100 x 1 tablets.

Bottles

White, high-density polyethylene bottle with or without a child-resistant cap containing 30 tablets.

Not all pack sizes may be marketed.

6.6 Special precautions for disposal

No special requirements for disposal.

7. MARKETING AUTHORISATION HOLDER

Teva B.V.
Swensweg 5
2031 GA Haarlem
Netherlands

8. MARKETING AUTHORISATION NUMBER(S)

EU/1/14/977/001-010

9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 12 January 2015

Date of latest renewal:

10. DATE OF REVISION OF THE TEXT

MM/YYYY

Detailed information on this product is available on the website of the European Medicines Agency
<http://www.ema.europa.eu>

ANNEX II

- A. MANUFACTURER(S) RESPONSIBLE FOR BATCH RELEASE**
- B. CONDITIONS OR RESTRICTIONS REGARDING SUPPLY AND USE**
- C. OTHER CONDITIONS AND REQUIREMENTS OF THE MARKETING AUTHORISATION**
- D. CONDITIONS OR RESTRICTIONS WITH REGARD TO THE SAFE AND EFFECTIVE USE OF THE MEDICINAL PRODUCT**

A. MANUFACTURER(S) RESPONSIBLE FOR BATCH RELEASE

Name and address of the manufacturer(s) responsible for batch release

Teva Pharmaceuticals Europe B.V.
Swensweg 5
NL-2031 GA Haarlem
The Netherlands

Pliva Croatia Ltd.
Prilaz baruna Filipovica 25
10000 Zagreb
Croatia

Teva Operations Poland Sp.z o.o.
ul. Mogilska 80
31-546 Krakow
Poland

The printed package leaflet of the medicinal product must state the name and address of the manufacturer responsible for the release of the concerned batch.

B. CONDITIONS OR RESTRICTIONS REGARDING SUPPLY AND USE

Medicinal product subject to medical prescription.

C. OTHER CONDITIONS AND REQUIREMENTS OF THE MARKETING AUTHORISATION

• Periodic Safety Update Reports

The requirements for submission of periodic safety update reports for this medicinal product are set out in the list of Union reference dates (EURD list) provided for under Article 107c(7) of Directive 2001/83/EC and any subsequent updates published on the European medicines web-portal.

D. CONDITIONS OR RESTRICTIONS WITH REGARD TO THE SAFE AND EFFECTIVE USE OF THE MEDICINAL PRODUCT

• Risk Management Plan (RMP)

The MAH shall perform the required pharmacovigilance activities and interventions detailed in the agreed RMP presented in Module 1.8.2 of the Marketing Authorisation and any agreed subsequent updates of the RMP.

An updated RMP should be submitted:

- At the request of the European Medicines Agency;
- Whenever the risk management system is modified, especially as the result of new information being received that may lead to a significant change to the benefit/risk profile or as the result of an important (pharmacovigilance or risk minimisation) milestone being reached.

ANNEX III
LABELLING AND PACKAGE LEAFLET

A. LABELLING

PARTICULARS TO APPEAR ON THE OUTER PACKAGING

CARTON FOR BLISTER PACK

1. NAME OF THE MEDICINAL PRODUCT

Rasagiline ratiopharm 1 mg tablets
rasagiline

2. STATEMENT OF ACTIVE SUBSTANCE(S)

Each tablet contains 1 mg of rasagiline (as mesilate).

3. LIST OF EXCIPIENTS

4. PHARMACEUTICAL FORM AND CONTENTS

Tablet

7 tablets
10 tablets
28 tablets
30 tablets
100 tablets
112 tablets
10 x 1 tablets
30 x 1 tablets
100 x 1 tablets

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Oral use.
Read the package leaflet before use.

6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN

Keep out of the sight and reach of children.

7. OTHER SPECIAL WARNING(S), IF NECESSARY

8. EXPIRY DATE

EXP

9. SPECIAL STORAGE CONDITIONS

Do not store above 30°C.

10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE

11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER

Teva B.V.
2031 GA Haarlem,
Netherlands

12. MARKETING AUTHORISATION NUMBER(S)

EU/1/14/977/001
EU/1/14/977/002
EU/1/14/977/003
EU/1/14/977/004
EU/1/14/977/005
EU/1/14/977/006
EU/1/14/977/008
EU/1/14/977/009
EU/1/14/977/010

13. BATCH NUMBER

Lot

14. GENERAL CLASSIFICATION FOR SUPPLY

15. INSTRUCTIONS ON USE

16. INFORMATION IN BRAILLE

Rasagiline ratiopharm

17. UNIQUE IDENTIFIER – 2D BARCODE

2D barcode carrying the unique identifier included.

18. UNIQUE IDENTIFIER – HUMAN READABLE DATA

PC:
SN:
NN:

MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS

BLISTER

1. NAME OF THE MEDICINAL PRODUCT

Rasagiline ratiopharm 1 mg tablets
rasagiline

2. NAME OF THE MARKETING AUTHORISATION HOLDER

Teva B.V.

3. EXPIRY DATE

EXP

4. BATCH NUMBER

Lot

5. OTHER

PARTICULARS TO APPEAR ON THE OUTER PACKAGING

CARTON FOR BOTTLE

1. NAME OF THE MEDICINAL PRODUCT

Rasagiline ratiopharm 1 mg tablets
rasagiline

2. STATEMENT OF ACTIVE SUBSTANCE(S)

Each tablet contains 1 mg of rasagiline (as mesilate).

3. LIST OF EXCIPIENTS

4. PHARMACEUTICAL FORM AND CONTENTS

Tablet

30 tablets

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Oral use.
Read the package leaflet before use.

6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN

Keep out of the sight and reach of children.

7. OTHER SPECIAL WARNING(S), IF NECESSARY

8. EXPIRY DATE

EXP

9. SPECIAL STORAGE CONDITIONS

Do not store above 30°C.

10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE

11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER

Teva B.V.
2031 GA Haarlem,
Netherlands

12. MARKETING AUTHORISATION NUMBER(S)

EU/1/14/977/007

13. BATCH NUMBER

Lot

14. GENERAL CLASSIFICATION FOR SUPPLY

15. INSTRUCTIONS ON USE

16. INFORMATION IN BRAILLE

Rasagiline ratiopharm

17. UNIQUE IDENTIFIER – 2D BARCODE

2D barcode carrying the unique identifier included.

18. UNIQUE IDENTIFIER – HUMAN READABLE DATA

PC:
SN:
NN:

PARTICULARS TO APPEAR ON THE IMMEDIATE PACKAGING

BOTTLE LABEL

1. NAME OF THE MEDICINAL PRODUCT

Rasagiline ratiopharm 1 mg tablets
rasagiline

2. STATEMENT OF ACTIVE SUBSTANCE(S)

Each tablet contains 1 mg of rasagiline (as mesilate).

3. LIST OF EXCIPIENTS

4. PHARMACEUTICAL FORM AND CONTENTS

Tablet

30 tablets

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Oral use.
Read the package leaflet before use.

6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN

Keep out of the sight and reach of children.

7. OTHER SPECIAL WARNING(S), IF NECESSARY

8. EXPIRY DATE

EXP

9. SPECIAL STORAGE CONDITIONS

Do not store above 30°C.

10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE

11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER

Teva B.V.
2031 GA Haarlem, The Netherlands

12. MARKETING AUTHORISATION NUMBER(S)

EU/1/14/977/007

13. BATCH NUMBER

Lot

14. GENERAL CLASSIFICATION FOR SUPPLY

15. INSTRUCTIONS ON USE

16. INFORMATION IN BRAILLE

Rasagiline ratiopharm

17. UNIQUE IDENTIFIER – 2D BARCODE

18. UNIQUE IDENTIFIER - HUMAN READABLE DATA

B. PACKAGE LEAFLET

Package leaflet: Information for the user

Rasagiline ratiopharm 1 mg tablets rasagiline

Read all of this leaflet carefully before you start taking this medicine because it contains important information for you.

- Keep this leaflet. You may need to read it again.
- If you have any further questions, ask your doctor or pharmacist.
- This medicine has been prescribed for you only. Do not pass it on to others. It may harm them, even if their signs of illness are the same as yours.
- If you get any side effects, talk to your doctor or pharmacist. This includes any possible side effects not listed in this leaflet. See section 4.

What is in this leaflet

1. What Rasagiline ratiopharm is and what it is used for
2. What you need to know before you take Rasagiline ratiopharm
3. How to take Rasagiline ratiopharm
4. Possible side effects
5. How to store Rasagiline ratiopharm
6. Contents of the pack and other information

1. What Rasagiline ratiopharm is and what it is used for

Rasagiline ratiopharm contains the active substance rasagiline and it is used for the treatment of Parkinson's disease in adults. It can be used together with or without Levodopa (another medicine that is used to treat Parkinson's disease).

With Parkinson's disease, there is a loss of cells that produce dopamine in the brain. Dopamine is a chemical in the brain involved in movement control. Rasagiline ratiopharm helps to increase and sustain levels of dopamine in the brain.

2. What you need to know before you take Rasagiline ratiopharm

Do not take Rasagiline ratiopharm

- If you are allergic to rasagiline or any of the other ingredients of this medicine (listed in section 6).
- If you have severe liver problems.

Do not take the following medicines while taking Rasagiline ratiopharm:

- Monoamine oxidase (MAO) inhibitors (e.g. for treatment of depression or Parkinson's disease, or used for any other indication), including medicinal and natural products without prescription e.g. St. John's Wort.
- Pethidine (a strong pain killer).

You must wait at least 14 days after stopping Rasagiline ratiopharm treatment and starting treatment with MAO inhibitors or pethidine.

Warnings and precautions

Talk to your doctor before taking Rasagiline ratiopharm

- If you have any liver problems
- You should speak with your doctor about any suspicious skin changes.

Tell your doctor if you or your family/carer notices that you are developing unusual behaviours where you cannot resist the impulse, urges or cravings to carry out certain harmful or detrimental activities to yourself or others. These are called impulse control disorders. In patients taking Rasagiline ratiopharm

and/or other medicines used to treat Parkinson's disease, behaviours such as compulsions, obsessive thoughts, addictive gambling, excessive spending, impulsive behaviour and an abnormally high sex drive or an increase in sexual thoughts or feelings have been observed. Your doctor may need to adjust or stop your dose (see section 4).

Rasagiline ratiopharm may cause drowsiness and may cause you to suddenly fall asleep during day time activities, especially if you are taking other dopaminergic medicinal products (used for the treatment of Parkinson's disease). For further information please refer to section driving and using machines.

Children and adolescents

There is no relevant use of Rasagiline ratiopharm in children and adolescents. Therefore, Rasagiline ratiopharm is not recommended for use under the age of 18.

Other medicines and Rasagiline ratiopharm

Tell your doctor or pharmacist if you are taking, have recently taken or might take any other medicines.

Especially tell your doctor if you are taking any of the following medicines:

- Certain antidepressants (selective serotonin reuptake inhibitors, selective serotonin-norepinephrine reuptake inhibitors, tricyclic or tetracyclic antidepressants)
- The antibiotic ciprofloxacin used against infections
- The cough suppressant dextromethorphan
- Sympathomimetics such as those present in eye drops, nasal and oral decongestants and cold medicine containing ephedrine or pseudoephedrine

The use of Rasagiline ratiopharm together with the antidepressants containing fluoxetine or fluvoxamine should be avoided.

If you are starting treatment with Rasagiline ratiopharm, you should wait at least 5 weeks after stopping fluoxetine treatment.

If you are starting treatment with fluoxetine or fluvoxamine, you should wait at least 14 days after stopping Rasagiline ratiopharm treatment.

Tell your doctor or pharmacist if you are smoking or intend to stop smoking. Smoking could decrease the amount of Rasagiline ratiopharm in the blood.

Pregnancy, breast-feeding and fertility

If you are pregnant or breast-feeding, think you may be pregnant or are planning to have a baby, ask your doctor or pharmacist for advice before taking this medicine.

You should avoid taking Rasagiline ratiopharm if you are pregnant, as the effects of Rasagiline ratiopharm on pregnancy and the unborn child are not known.

Driving and using machines

Ask your doctor for advice before you drive and operate machines, since Parkinson's disease itself as well as the treatment with Rasagiline ratiopharm may influence your ability to do so. Rasagiline ratiopharm can make you feel dizzy or drowsy; it can also cause episodes of sudden sleep onset. This might be enhanced if you take other medicines to treat the symptoms of your Parkinson's disease, or if you take medicines which can make you feel drowsy, or if you drink alcohol while taking Rasagiline ratiopharm. If you have experienced somnolence and/or episodes of sudden sleep onset before, or while taking Rasagiline ratiopharm do not drive or operate machinery (see section 2).

3. How to take Rasagiline ratiopharm

Always take this medicine exactly as your doctor or pharmacist has told you. Check with your doctor or pharmacist if you are not sure.

The recommended dose of Rasagiline ratiopharm is 1 tablet of 1 mg taken by mouth once daily. Rasagiline ratiopharm may be taken with or without food.

If you take more Rasagiline ratiopharm than you should

If you think that you may have taken too many Rasagiline ratiopharm tablets, contact your doctor or pharmacist immediately. Take the Rasagiline ratiopharm carton/ blister or bottle with you to show the doctor or pharmacist.

Symptoms reported following overdose of Rasagiline ratiopharm included slightly euphoric mood (light form of mania), extremely high blood pressure and serotonin syndrome (see section 4).

If you forget to take Rasagiline ratiopharm

Do not take a double dose to make up for a forgotten dose. Take the next dose normally, when it is time to take it.

If you stop taking Rasagiline ratiopharm

Do not stop taking Rasagiline ratiopharm without first talking to your doctor.

If you have any further questions on the use of this medicine, ask your doctor or pharmacist.

4. Possible side effects

Like all medicines, this medicine can cause side effects, although not everybody gets them.

Contact your doctor right away if you notice any of the following symptoms. You may need urgent medical advice or treatment:

- If you develop unusual behaviours such as compulsions, obsessive thoughts, addictive gambling, excessive shopping or spending, impulsive behaviour and an abnormally high sex drive or an increase in sexual thoughts (impulse control disorders) (see section 2).
- If you see or hear things which are not there (hallucinations).
- Any combination of hallucinations, fever, restlessness, tremor and sweating (serotonin syndrome)
- If you notice any suspicious skin changes because there is a higher risk of skin cancer (not exclusively melanoma) in patients with Parkinson's disease (see section 2).

Other side effects

Very common (may affect more than 1 in 10 people)

- Involuntary movements (dyskinesia)
- Headache

Common (may affect up to 1 in 10 people)

- Abdominal pain
- Fall
- Allergy
- Fever
- Flu (influenza)
- General feeling of being unwell (malaise)
- Neck pain
- Chest pain (angina pectoris)
- Low blood pressure when rising to a standing position with symptoms like dizziness/light-headedness (orthostatic hypotension)
- Decreased appetite
- Constipation
- Dry mouth
- Nausea and vomiting
- Flatulence

- Abnormal results of blood tests (leucopenia)
- Joint pain (arthralgia)
- Musculoskeletal pain
- Joint inflammation (arthritis)
- Numbness and muscle weakness of the hand (carpal tunnel syndrome)
- Decreased weight
- Abnormal dreams
- Difficulty in muscular coordination (balance disorder)
- Depression
- Dizziness (vertigo)
- Prolonged muscle contractions (dystonia)
- Runny nose (rhinitis)
- Irritation of the skin (dermatitis)
- Rash
- Bloodshot eyes (conjunctivitis)
- Urinary urgency

Uncommon (may affect up to 1 in 100 people)

- Stroke (cerebrovascular accident)
- Heart attack (myocardial infarction)
- Blistering rash (vesiculobullous rash)

Not known: frequency cannot be estimated from the available data

- Elevated blood pressure
- Excessive drowsiness
- Sudden onset of sleep

Reporting of side effects

If you get any side effects, talk to your doctor or pharmacist. This includes any possible side effects not listed in this leaflet. You can also report side effects directly via [the national reporting system listed in Appendix V](#). By reporting side effects you can help provide more information on the safety of this medicine.

5. How to store Rasagiline ratiopharm

Keep this medicine out of the sight and reach of children.

Do not use this medicine after the expiry date which is stated on the carton, bottle or blister after EXP. The expiry date refers to the last day of that month.

Do not store above 30°C.

Do not throw away any medicines via wastewater or household waste. Ask your pharmacist how to throw away medicines you no longer use. These measures will help protect the environment.

6. Contents of the pack and other information

What Rasagiline ratiopharm contains

- The active substance is rasagiline. Each tablet contains 1 mg rasagiline (as mesilate).
- The other ingredients are mannitol, colloidal anhydrous silica, maize starch, pregelatinised maize starch, stearic acid, talc.

What Rasagiline ratiopharm looks like and contents of the pack

Rasagiline ratiopharm tablets are presented as white to off-white, round, flat, bevelled tablets, debossed with "GIL" and "1" underneath on one side and plain on the other side.

The tablets are available in blister packs of 7, 10, 28, 30, 100 and 112 tablets, in perforated unit dose blister packs of 10 x 1, 30 x 1 and 100 x 1 tablets or in a bottle containing 30 tablets.
Not all pack sizes may be marketed.

Marketing Authorisation Holder

Teva B.V.
Swensweg 5
2031 GA Haarlem
Netherlands

Manufacturers

Teva Pharmaceuticals Europe B.V.
Swensweg 5
2031 GA Haarlem
Netherlands

Pliva Croatia Ltd.
Prilaz baruna Filipovica 25
10000 Zagreb
Croatia

Teva Operations Poland Sp.z o.o.
ul. Mogilska 80
31-546 Krakow
Poland

For any information about this medicinal product, please contact the local representative of the Marketing Authorisation Holder:

België/Belgique/Belgien

Teva Pharma Belgium N.V./S.A./AG
Tel/Tél: +32 3 820 73 73

Lietuva

UAB "Sicor Biotech"
Tel: +370 5 266 02 03

България

Тева Фармасютикълс България ЕООД
Тел: +359 2 489 95 82

Luxembourg/Luxemburg

Teva Pharma Belgium N.V./S.A./AG, Belgium
Tel/Tél: +32 3 820 73 73

Česká republika

Teva Pharmaceuticals CR, s.r.o.
Tel: +420 251 007 111

Magyarország

Teva Gyógyszergyár Zrt.
Tel.: +36 1 288 64 00

Danmark

Teva Denmark A/S
Tlf: +45 44 98 55 11

Malta

Teva Pharmaceuticals Ireland
L-Irlanda
Tel: +353 51 321 740

Deutschland

ratiopharm GmbH
Tel: +49 731 402 02

Nederland

Teva Nederland B.V.
Tel: +31 800 0228 400

Eesti

Teva Eesti esindus UAB Sicor Biotech Eesti filiaal
Tel: +372 661 0801

Norge

Teva Norway AS
Tlf: +47 6677 55 90

Ελλάδα

Teva Ελλάς A.E.
Τηλ: +30 210 72 79 099

España

Laboratorios Davur, S.L.U.
Tél: +34 91 387 32 80

France

Teva Santé
Tél: +33 1 55 91 7800

Hrvatska

Pliva Hrvatska d.o.o
Tel: + 385 1 37 20 000

Ireland

Teva Pharmaceuticals Ireland
Tel: +353 51 321 740

Ísland

Actavis Pharmaceuticals Iceland ehf.
Simi: +354 550 3300

Italia

Teva Italia S.r.l.
Tel: +39 028 917 981

Κύπρος

Teva Ελλάς A.E., Ελλάδα
Τηλ: +30 210 72 79 099

Latvija

Sicor Biotech filiāle Latvijā
Tel: +371 67 323 666

Österreich

ratiopharm Arzneimittel Vertriebs GmbH
Tel: +43 1 97007 0

Polska

Teva Pharmaceuticals Polska Sp. z o.o.
Tel.: +48 22 345 93 00

Portugal

Teva Pharma - Produtos Farmacêuticos Lda
Tel: +351 21 476 75 50

România

Teva Pharmaceuticals S.R.L
Tel: +4021 230 6524

Slovenija

Pliva Ljubljana d.o.o.
Tel: +386 1 58 90 390

Slovenská republika

Teva Pharmaceuticals Slovakia s.r.o.
Tel: +421 2 5726 7911

Suomi/Finland

ratiopharm Oy
Puh/Tel: +358 20 180 5900

Sverige

Teva Sweden AB
Tel: +46 42 12 11 00

United Kingdom

Teva UK Limited
Tel: +44 1977 628 500

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