Mycophenolic Acid Delayed Release Tablets

180 mg

(mythephenolic acid*)

*as mycophenolate sodium

Rx only

Prescribing Information

**WARNING: EMBRYOFETAL TOXICITY, MALIGNANCIES AND SERIOUS INFECTIONS**

Use during pregnancy is associated with increased risks of first trimester pregnancy loss and congenital malformations. Females of reproductive potential (FRP) must be counseled regarding pregnancy prevention and planning. (see WARNINGS and PRECAUTIONS)

Immunosuppression may lead to increased susceptibility to infection and possible development of lymphoma and other neoplasms. Only physicians experienced in immunosuppressive therapy and management of organ transplant recipients should prescribe mycophenolic acid delayed release tablets (mycophenolic acid). Patients receiving mycophenolic acid delayed release tablets should be managed in facilities equipped and staffed with adequate laboratory and supportive medical resources. The physician responsible for maintenance therapy should have complete information requisite for the follow up of the patient. (see WARNINGS and PRECAUTIONS)

**DESCRIPTION**

Mycophenolic acid delayed release tablets are an enteric formulation of mycophenolate sodium that delivers the active moiety mycophenolic acid (MPA). Mycophenolic acid is an immunosuppressive agent. As the sodium salt, MPA is chemically designated as (E)-6-(4-hydroxy-6-methoxy-7-methyl-3-oxo-1,3-dihydroisobenzofuran-5-yl)-4-methylhex-4-enoic acid sodium salt.

Its empirical formula is C_{17}H_{19}O_{6} Na. The molecular weight is 342.32 and the structural formula is

![Structural formula of mycophenolic acid](image)

Mycophenolic acid, as the sodium salt, is a white to off-white, crystalline powder and is highly soluble in aqueous media at physiological pH and practically insoluble in 0.1 N hydrochloric acid.

Mycophenolic acid is available for oral use as delayed release tablets containing 180 mg of mycophenolic acid. Inactive ingredients include methycellulose, sodium lauryl sulfate, stearic acid, colloidal silicon dioxide, hypromellose, polyethylene glycol, triethyl citrate and talc. The enteric coating of the tablet consists of titanium dioxide, yellow ferric oxide, indigotin and methylacryl.
CLINICAL PHARMACOLOGY

Mechanism of Action

MPA (mycophenolic acid) is an uncompetitive and reversible inhibitor of inosine monophosphate dehydrogenase (IMPDH), and therefore inhibits the de novo pathway of guanosine nucleotide synthesis without incorporation to DNA. Because T- and B-lymphocytes are critically dependent for their proliferation on de novo synthesis of purines, whereas other cell types can utilize salvage pathways, MPA has potent cytostatic effects on lymphocytes.

Mycophenolate sodium has been shown to prevent the occurrence of acute rejection in rat models of kidney and heart allotransplantation. Mycophenolate sodium also decreases antibody production in mice.

Pharmacokinetics

Absorption

In-vitro studies demonstrated that the enteric-coated mycophenolic acid delayed release (mycophenolic acid) tablet does not release MPA under acidic conditions (pH <5) as in the stomach but is highly soluble in neutral pH conditions as in the intestine. Following mycophenolic acid delayed release tablet oral administration without food in several pharmacokinetic studies conducted in renal transplant patients, consistent with its enteric-coated formulation, the median delay (T_{lag}) in the rise of MPA concentration ranged between 0.25 and 1.25 hours and the median time to maximum concentration (T_{max}) of MPA ranged between 1.5 and 2.75 hours. In comparison, following the administration of mycophenolate mofetil, the median T_{max} ranged between 0.5 and 1.0 hours. In stable renal transplant patients on cyclosporine, USP (MODIFIED) based immunosuppression, gastrointestinal absorption and absolute bioavailability of MPA following the administration of mycophenolic acid delayed release tablet was 93% and 72%, respectively. Mycophenolic acid delayed release tablets pharmacokinetics is dose proportional over the dose range of 360 to 2160 mg.

Distribution

The mean (± SD) volume of distribution at steady state and elimination phase for MPA is 54 (± 25) L and 112 (± 48) L, respectively. MPA is highly protein bound to albumin, >98%. The protein binding of mycophenolic acid glucuronide (MPAG) is 82%. The free MPA concentration may increase under conditions of decreased protein binding (uremia, hepatic failure, and hypoalbuminemia).

Metabolism

MPA is metabolized principally by glucuronyl transferase to glucuronidated metabolites. The phenolic glucuronide of MPA, mycophenolic acid glucuronide (MPAG), is the predominant metabolite of MPA and does not manifest pharmacological activity. The acyl glucuronide is a minor metabolite and has comparable pharmacological activity to MPA. In stable renal transplant patients on cyclosporine, USP (MODIFIED) based immunosuppression, approximately 28% of the oral mycophenolic acid delayed release tablets dose was converted to MPAG by pre-systemic metabolism. The AUC ratio of MPA:MPAG:acyl glucuronide is approximately 1:24:0.28 at steady state. The mean clearance of MPA was 140 (± 30) mL/min.

Elimination

The majority of MPA dose administered is eliminated in the urine primarily as MPAG (>60%) and approximately 3% as unchanged MPA following mycophenolic acid administration to stable renal transplant patients. The mean renal clearance of MPAG was 15.5 (± 5.9) mL/min. MPAG is also secreted in the bile and available for deconjugation by gut flora. MPA resulting from the deconjugation may then be reabsorbed and produce a second peak of MPA approximately 6 to 8 hours after mycophenolic acid dosing. The mean elimination half-life of MPA and MPAG ranged between 8 and 16 hours, and 13 and 17 hours, respectively.

Food Effect

Compared to the fasting state, administration of mycophenolic acid delayed release tablets 720 mg with a high-fat meal (55 g fat, 1000 calories) had no effect on the systemic exposure (AUC) of MPA. However, there was a 33% decrease in the maximal concentration (C_{max}), a 3.5-hour delay in the T_{lag} (range, -6 to 18 hours), and 5.0-hour
delay in the T\textsubscript{max} (range, -9 to 20 hours) of MPA. To avoid the variability in MPA absorption between doses, mycophenolic acid delayed release tablets should be taken on an empty stomach (see DOSAGE AND ADMINISTRATION and PRECAUTIONS, Information for Patients).

Pharmacokinetics in Renal Transplant Patients

The mean pharmacokinetic parameters for MPA following the administration of mycophenolic acid in renal transplant patients on cyclosporine, USP (MODIFIED) based immunosuppression are shown in Table 1. Single-dose mycophenolic acid pharmacokinetics predicts multiple-dose pharmacokinetics. However, in the early post-transplant period, mean MPA AUC and C\textsubscript{max} were approximately one-half of those measured 6 months post-transplant.

After near equimolar dosing of mycophenolic acid 720 mg BID and mycophenolate mofetil 1000 mg BID (739 mg as MPA) in both the single- and multiple-dose cross-over trials, mean systemic MPA exposure (AUC) was similar.

### Table 1 Mean ± SD Pharmacokinetic Parameters for MPA Following the Oral Administration of Mycophenolic Acid Delayed Release Tablets to Renal Transplant Patients on Cyclosporine, USP (MODIFIED) Based Immunosuppression

<table>
<thead>
<tr>
<th>Study Patient</th>
<th>Mycophenolic Acid Delayed Release Tablets Dosing</th>
<th>n</th>
<th>Dose (mg)</th>
<th>T\textsubscript{max}* (hr)</th>
<th>C\textsubscript{max} (µg/mL)</th>
<th>AUC\textsubscript{0-12hr} (µg*hr/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>Single</td>
<td>24</td>
<td>720</td>
<td>2 (0.8 – 8)</td>
<td>26.1 ± 12.0</td>
<td>66.5 ± 22.6**</td>
</tr>
<tr>
<td>Pediatric***</td>
<td>Single</td>
<td>10</td>
<td>450 /m\textsuperscript{2}</td>
<td>2.5 (1.5 – 24)</td>
<td>36.3 ± 20.9</td>
<td>74.3 ± 22.5**</td>
</tr>
<tr>
<td>Adult</td>
<td>Multiple x 6 days, BID</td>
<td>10</td>
<td>720</td>
<td>2 (1.5 – 3.0)</td>
<td>37.0 ± 13.3</td>
<td>67.9 ± 20.3</td>
</tr>
<tr>
<td>Adult</td>
<td>Multiple x 28 days, BID</td>
<td>36</td>
<td>720</td>
<td>2.5 (1.5 – 8)</td>
<td>31.2 ± 18.1</td>
<td>71.2 ± 26.3</td>
</tr>
<tr>
<td>Adult</td>
<td>Chronic, multiple dose, BID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 weeks post-transplant</td>
<td>12</td>
<td>720</td>
<td>1.8 (1.0 – 5.3)</td>
<td>15.0 ± 10.7</td>
<td>28.6 ± 11.5</td>
</tr>
<tr>
<td></td>
<td>3 months post-transplant</td>
<td>12</td>
<td>720</td>
<td>2 (0.5 – 2.5)</td>
<td>26.2 ± 12.7</td>
<td>52.3 ± 17.4</td>
</tr>
<tr>
<td></td>
<td>6 months post-transplant</td>
<td>12</td>
<td>720</td>
<td>2 (0 – 3)</td>
<td>24.1 ± 9.6</td>
<td>57.2 ± 15.3</td>
</tr>
<tr>
<td>Adult</td>
<td>Chronic, multiple dose, BID</td>
<td>18</td>
<td>720</td>
<td>1.5 (0 – 6)</td>
<td>18.9 ± 7.9</td>
<td>57.4 ± 15.0</td>
</tr>
</tbody>
</table>

*median (range), **AUC\textsubscript{0-∞}*** age range of 5 – 16 years

Special Populations

**Renal Insufficiency:** No specific pharmacokinetic studies in individuals with renal impairment were conducted with mycophenolic acid delayed release tablets. However, based on studies of renal impairment with mycophenolate mofetil, MPA exposure is not expected to be appreciably increased over the range of normal to severely-impaired renal function following mycophenolic acid delayed release tablets administration. In contrast, MPAG exposure would be increased markedly with decreased renal function; MPAG exposure being approximately 8-fold higher in the setting of anuria. Although dialysis may be used to remove the inactive
metabolite MPAG, it would not be expected to remove clinically significant amounts of the active moiety MPA. This is in large part due to the high plasma protein binding of MPA.

**Hepatic Insufficiency:** No specific pharmacokinetic studies in individuals with hepatic impairment were conducted with mycophenolic acid delayed release tablets. In a single dose (mycophenolate mofetil 1000 mg) study of 18 volunteers with alcoholic cirrhosis and 6 healthy volunteers, hepatic MPA glucuronidation processes appeared to be relatively unaffected by hepatic parenchymal disease when the pharmacokinetic parameters of healthy volunteers and alcoholic cirrhosis patients within this study were compared. However, it should be noted that for unexplained reasons, the healthy volunteers in this study had about a 50% lower AUC compared to healthy volunteers in other studies, thus making comparison between volunteers with alcoholic cirrhosis and health volunteers difficult. Effects of hepatic disease on this process probably depend on the particular disease. Hepatic disease, such as primary biliary cirrhosis, with other etiologies may show a different effect.

**Pediatrics:** Limited data are available on the use of mycophenolic acid delayed release tablets at a dose of 450 mg/m² body surface area in children. The mean MPA pharmacokinetic parameters for stable pediatric renal transplant patients, 5 to 16 years, on cyclosporine, USP (MODIFIED) are shown in Table 1. At the same dose administered based on body surface area, the respective mean Cₘₐₓ and AUC of MPA determined in children were higher by 33% and 18% than those determined for adults. The clinical impact of the increase in MPA exposure is not known.

**Gender:** There are no significant gender differences in mycophenolic acid delayed release tablets pharmacokinetics.

**Elderly:** Pharmacokinetics in the elderly have not been formally studied.

### CLINICAL STUDIES

The safety and efficacy of mycophenolic acid delayed release tablets (mycophenolic acid) in combination with cyclosporine, USP (MODIFIED) and corticosteroids for the prevention of organ rejection was assessed in two multicenter, randomized, double-blind trials in de novo and maintenance renal transplant patients compared to mycophenolate mofetil.

The de novo study was conducted in 423 renal transplant patients (ages 18 to 75 years) in Austria, Canada, Germany, Hungary, Italy, Norway, Spain, UK and USA. Cadaveric donor specimens accounted for 84% of randomized patients. Patients were administered either mycophenolic acid delayed release tablets 1.44 g/day or mycophenolate mofetil 2 g/day within 48 hours post-transplant for 12 months in combination with cyclosporine, USP (MODIFIED) and corticosteroids. Forty-one percent of patients received antibody therapy as induction treatment. Treatment failure was defined as the first occurrence of biopsy-proven acute rejection, graft loss, death or lost to follow-up at 6 months. The incidence of treatment failure was similar in mycophenolic acid delayed release tablets- and mycophenolate mofetil-treated patients at 6 and 12 months (Table 2). The cumulative incidence of graft loss, death and lost to follow-up at 12 months is also given in Table 2.

| Table 2 Treatment Failure in de novo Renal Transplant Patients (Percent of Patients) at 6 and 12 Months of Treatment when Administered in Combination with Cyclosporine* and Corticosteroids |
|-------------------------------------------------|-------------------------------------------------|
|                                                 | Mycophenolic Acid Delayed Release Tablets        |
|                                                 | 1.44 g/day (n=213)                               |
| 6 Months                                        |                                                 |
| Treatment failure*                              | n (%)                                           |
| Biopsy-proven acute rejection                   | 55 (25.8)                                       |
| Graft loss                                      | 46 (21.6)                                       |
| Death                                           | 7 (3.3)                                         |
| Lost to follow-up**                             | 1 (0.5)                                         |
|                                                 |                                                 |
|                                                 | Mycophenolate Mofetil                           |
|                                                 | 2 g/day (n=210)                                 |
| 6 Months                                        |                                                 |
| Treatment failure*                              | n (%)                                           |
| Biopsy-proven acute rejection                   | 55 (26.2)                                       |
| Graft loss                                      | 48 (22.9)                                       |
| Death                                           | 9 (4.3)                                         |
| Lost to follow-up**                             | 2 (1.0)                                         |
The maintenance study was conducted in 322 renal transplant patients (ages 18 to 75 years), who were at least 6 months post-transplant receiving 2 g/day mycophenolate mofetil in combination with cyclosporine USP (MODIFIED), with or without corticosteroids for at least two weeks prior to entry in the study. Patients were randomized to mycophenolic acid delayed release tablets 1.44 g/day or mycophenolate mofetil 2 g/day for 12 months. The study was conducted in Austria, Belgium, Canada, Germany, Italy, Spain, and USA. Treatment failure was defined as the first occurrence of biopsy-proven acute rejection, graft loss, death, or lost to follow-up at 6 and 12 months. The incidences of treatment failure at 6 and 12 months were similar between mycophenolic acid delayed release tablets- and mycophenolate mofetil-treated patients (Table 3). The cumulative incidence of graft loss, death and lost to follow-up at 12 months is also given in Table 3.

Table 3 Treatment Failure in Maintenance Transplant Patients (Percent of Patients) at 6 and 12 Months of Treatment when Administered in Combination with Cyclosporine* and with or without Corticosteroids

<table>
<thead>
<tr>
<th></th>
<th>Mycophenolic Acid Delayed Release Tablets 1.44 g/day (n = 159)</th>
<th>Mycophenolate Mofetil 2 g/day (n = 163)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6 Months</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment failure#</td>
<td>7 (4.4)</td>
<td>11 (6.7)</td>
</tr>
<tr>
<td>Biopsy-proven acute rejection</td>
<td>2 (1.3)</td>
<td>2 (1.2)</td>
</tr>
<tr>
<td>Graft loss</td>
<td>0</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Death</td>
<td>0</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Lost to follow-up**</td>
<td>5 (3.1)</td>
<td>7 (4.3)</td>
</tr>
<tr>
<td><strong>12 Months</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graft loss or death or lost to follow-up***</td>
<td>10 (6.3)</td>
<td>17 (10.4)</td>
</tr>
<tr>
<td>Treatment failure</td>
<td>12 (7.5)</td>
<td>20 (12.3)</td>
</tr>
<tr>
<td>Biopsy-proven acute rejection</td>
<td>2 (1.3)</td>
<td>5 (3.1)</td>
</tr>
<tr>
<td>Graft loss</td>
<td>0</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td></td>
<td>Mycophenolic Acid Delayed Release Tablets 1.44 g/day (n = 159)</td>
<td>Mycophenolate Mofetil 2 g/day (n = 163)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Death</td>
<td>2 (1.3)</td>
<td>4 (2.5)</td>
</tr>
<tr>
<td>Lost to follow-up**</td>
<td>8 (5.0)</td>
<td>10 (6.1)</td>
</tr>
</tbody>
</table>

*USP (MODIFIED)
**Lost to follow-up indicates patients who were lost to follow-up without prior biopsy-proven acute rejection, graft loss, or death
***Lost to follow-up indicates patients who were lost to follow-up without prior graft loss or death (8 mycophenolic acid delayed release tablets patients and 12 mycophenolate mofetil patients)
#95% confidence interval of the difference in treatment failure at 6 months (mycophenolic acid delayed release tablets– mycophenolate mofetil) is (7.4%, 2.7%).

The safety and efficacy of mycophenolic acid delayed release tablets has not been studied in hepatic or cardiac transplant trials.

**INDICATIONS AND USAGE**

Mycophenolic acid delayed release tablets (mycophenolic acid) are indicated for the prophylaxis of organ rejection in patients receiving allogeneic renal transplants, administered in combination with cyclosporine and corticosteroids.

**CONTRAINDICATIONS**

Mycophenolic acid delayed release tablets (mycophenolic acid) are contraindicated in patients with a hypersensitivity to mycophenolate sodium, mycophenolic acid, mycophenolate mofetil, or to any of its excipients.

**WARNINGS (SEE BOXED WARNING)**

**EMBRYOFETAL TOXICITY**

Mycophenolic acid delayed release tablets can cause fetal harm when administered to a pregnant female. Use of mycophenolic acid delayed release tablets during pregnancy is associated with an increased risk of first trimester pregnancy loss and an increased risk of congenital malformations, especially external ear and other facial abnormalities including cleft lip and palate, and anomalies of the distal limbs, heart, esophagus, and kidney (see PRECAUTIONS: Pregnancy).

Pregnancy Exposure Prevention and Planning

Females of reproductive potential must be made aware of the increased risk of first trimester pregnancy loss and congenital malformations and must be counseled regarding pregnancy prevention and planning. For recommended pregnancy testing and contraception methods (see PRECAUTIONS: Pregnancy Exposure Prevention and Planning).

Lymphoma and Other Malignancies

Patients receiving immunosuppressive regimens involving combinations of drugs, including mycophenolic acid delayed release tablets (mycophenolic acid), as part of an immunosuppressive regimen are at increased risk of developing lymphomas and other malignancies, particularly of the skin (see ADVERSE REACTIONS). The risk appears to be related to the intensity and duration of immunosuppression rather than to the use of any specific agent.

The rates for lymphoproliferative disease or lymphoma in mycophenolic acid delayed release tablets-treated
patients were comparable to the mycophenolate mofetil group in the de novo and maintenance studies (see ADVERSE REACTIONS). As usual for patients with increased risk for skin cancer, exposure to sunlight and UV light should be limited by wearing protective clothing and using a sunscreen with a high protection factor.

Infections
Oversuppression of the immune system can also increase susceptibility to infection, including opportunistic infections, fatal infections, and sepsis. Fatal infections can occur in patients receiving immunosuppressive therapy (see ADVERSE REACTIONS).

Polyomavirus Infections
Patients receiving immunosuppressants, including mycophenolic acid delayed release tablets are at increased risk for opportunistic infections, including Polyomavirus infections. Polyomavirus infections in transplant patients may have serious, and sometimes, fatal outcomes. These include cases of JC virus associated progressive multifocal leukoencephalopathy (PML) and Polyomavirus associated nephropathy (PVAN) especially due to BK virus infection which have been observed in patients receiving mycophenolate acid delayed release tablets.

PVAN, especially due to BK virus infection, is associated with serious outcomes, including deteriorating renal function and renal graft loss (see ADVERSE REACTIONS). Patient monitoring may help detect patients at risk for PVAN.

Cases of PML have been reported in patients treated with mycophenolic acid (MPA) derivatives which include mycophenolate mofetil (MMF) and mycophenolate sodium (see ADVERSE REACTIONS). PML, which is sometimes fatal, commonly presents with hemiparesis, apathy, confusion, cognitive deficiencies and ataxia. Risk factors for PML, include treatment with immunosuppressant therapies and impairment of immune function. In immunosuppressed patients, physicians should consider PML in the differential diagnosis in patients reporting neurological symptoms and consultation with a neurologist should be considered as clinically indicated.

Reduction in immunosuppression should be considered for patients who develop evidence of PML or PVAN. Physicians should also consider the risk that reduced immunosuppression represents to the functioning allograft.

Blood Dyscrasias Including Pure Red Cell Aplasia
Cases of pure red cell aplasia (PRCA) have been reported in patients treated with mycophenolic acid (MPA) derivatives in combination with other immunosuppressive agents. The mechanism for MPA derivatives induced PRCA is unknown; the relative contribution of other immunosuppressants and their combinations in an immunosuppressive regimen is also unknown. In some cases PRCA was found to be reversible with dose reduction or cessation of therapy with MPA derivatives. In transplant patients, however, reduced immunosuppression may place the graft at risk. Changes to mycophenolate acid delayed release tablets therapy should only be undertaken under appropriate supervision in transplant recipients in order to minimize the risk of graft rejection (see ADVERSE REACTIONS, Postmarketing Experience).

Patients receiving mycophenolic acid delayed release tablets should be monitored for blood dyscrasias (e.g. neutropenia or anemia (see PRECAUTIONS, Laboratory Tests). The development of neutropenia may be related to mycophenolic acid delayed release tablets itself, concomitant medications, viral infections, or some combination of these events. If blood dyscrasias occur (e.g. neutropenia (ANC<1.3 x 10^3 µL or anemia)), dosing with mycophenolic acid delayed release tablets should be interrupted or the dose reduced, appropriate diagnostic test performed, and the patient managed appropriately (see DOSAGE AND ADMINISTRATION).

Patients receiving mycophenolic acid delayed release tablets should be instructed to immediately report any evidence of infection, unexpected bruising, bleeding, or any other manifestation of bone marrow suppression.

Concomitant Use
Mycophenolic acid delayed release tablets have been administered in combination with the following agents in clinical trials: antithymocyte/lymphocyte immunoglobulin, muromonab-CD3, basiliximab, daclizumab, cyclosporine, and corticosteroids. The efficacy and safety of mycophenolic acid delayed release tablets in combination with
other immunosuppression agents have not been determined.

**PRECAUTIONS**

*Pregnancy Exposure Prevention and Planning*

Females of reproductive potential must be made aware of the increased risk of first trimester pregnancy loss and congenital malformations and must be counseled regarding pregnancy prevention and planning.

Females of reproductive potential include girls who have entered puberty and all women who have a uterus and have not passed through menopause. Menopause is the permanent end of menstruation and fertility. Menopause should be clinically confirmed by a patient’s healthcare practitioner. Some commonly used diagnostic criteria include 1) 12 months of spontaneous amenorrhea (not amenorrhea induced by a medical condition or medical therapy) or 2) postsurgical from a bilateral oophorectomy.

*Pregnancy Testing*

To prevent unplanned exposure during pregnancy, females of reproductive potential should have a serum or urine pregnancy test with a sensitivity of at least 25 mIU/mL immediately before starting mycophenolic acid delayed release tablets. Another pregnancy test with the same sensitivity should be done 8 to 10 days later. Repeat pregnancy tests should be performed during routine follow-up visits. Results of all pregnancy tests should be discussed with the patient.

In the event of a positive pregnancy test, females should be counseled with regard to whether the maternal benefits of mycophenolate treatment may outweigh the risks to the fetus in certain situations.

*Contraception*

Females of reproductive potential taking mycophenolic acid delayed release tablets must receive contraceptive counseling and use acceptable contraception (see Table 4 for Acceptable Contraception Methods). Patients must use acceptable birth control during entire mycophenolic acid therapy, and for 6 weeks after stopping mycophenolic acid delayed release tablets, unless the patient chooses abstinence (she chooses to avoid heterosexual intercourse completely).

Patients should be aware that mycophenolic acid reduce blood levels of the hormones in the oral contraceptive pill and could theoretically reduce its effectiveness (see PRECAUTIONS: Information for Patients and PRECAUTIONS: Drug Interactions: Oral Contraceptives).

**Table 4 Acceptable Contraception Methods for Females of Reproductive Potential**

*Pick from the following birth control options:*

<table>
<thead>
<tr>
<th>Option 1</th>
<th>Intrauterine devices (IUDs)</th>
<th>Tubal sterilization</th>
<th>Patient’s partner had a vasectomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods to Use Alone</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| OR |

<table>
<thead>
<tr>
<th>Option 2</th>
<th>Hormone Methods</th>
<th>Barrier Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose One Hormone Method AND One Barrier Method</td>
<td>Estrogen and Progesterone ORAL CONTRACEPTIVE PILL Transdermal patch Vaginal ring</td>
<td>AND</td>
</tr>
<tr>
<td>Progesterone-only Injection Implant</td>
<td></td>
<td>Diaphragm with spermicide Cervical cap with spermicide Contraceptive sponge Male condom Female condom</td>
</tr>
</tbody>
</table>
OR

<table>
<thead>
<tr>
<th>Option 3</th>
<th>Barrier Methods choose 1</th>
<th>Barrier Methods choose 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose One Barrier Method from each column <em>(must choose two methods)</em></td>
<td>Diaphragm with spermicide Cervical cap with spermicide Contraceptive sponge</td>
<td>AND Male condom Female condom</td>
</tr>
</tbody>
</table>

Pregnancy Planning
For patients who are considering pregnancy, consider alternative immunosuppressants with less potential for embryofetal toxicity. Risks and benefits of mycophenolic acid delayed release tablets should be discussed with the patient.

**Gastrointestinal Disorders**

Gastrointestinal bleeding (requiring hospitalization) has been reported in *de novo* renal transplant patients (1.0%) and maintenance patients (1.3%) treated with mycophenolic acid delayed release tablets (mycophenolic acid) (up to 12 months). Intestinal perforations, gastrointestinal hemorrhage, gastric ulcers and duodenal ulcers have rarely been observed. Most patients receiving mycophenolic acid delayed release tablets were also receiving other drugs known to be associated with these complications. Patients with active peptic ulcer disease were excluded from enrollment in studies with mycophenolic acid delayed release tablets. Because mycophenolic acid (MPA) derivatives have been associated with an increased incidence of digestive system adverse events, including infrequent cases of gastrointestinal tract ulceration, hemorrhage, and perforation, Mycophenolic acid delayed release tablets should be administered with caution in patients with active serious digestive system disease *(see ADVERSE REACTIONS)*.

**Patients with Renal Impairment**

Subjects with severe chronic renal impairment (GFR <25 mL/min/1.73 m²) may present higher plasma MPA and mycophenolic acid glucuronide (MPAG) AUCs relative to subjects with lesser degrees of renal impairment or normal healthy volunteers. No data are available on the safety of long-term exposure to these levels of MPAG.

In the *de novo* study, 18.3% of mycophenolic acid delayed release tablets patients versus 16.7% in the mycophenolate mofetil group experienced delayed graft function (DGF). Although patients with DGF experienced a higher incidence of certain adverse events (anemia, leukopenia, and hyperkalemia) than patients without DGF, these events in DGF patients were not more frequent in patients receiving mycophenolic acid delayed release tablets compared to mycophenolate mofetil. No dose adjustment is recommended for these patients; however, such patients should be carefully observed *(see CLINICAL PHARMACOLOGY and DOSAGE AND ADMINISTRATION)*.

**Concomitant Medications**

In view of the significant reduction in the AUC of MPA by cholestyramine when administered with mycophenolate mofetil, caution should be used in the concomitant administration of mycophenolic acid delayed release tablets with drugs that interfere with enterohepatic recirculation because of the potential to reduce the efficacy *(see PRECAUTIONS, Drug Interactions)*.

**Patients with HGPRT Deficiency**

On theoretical grounds, because mycophenolic acid delayed release tablets is an IMPDH Inhibitor, it should be avoided in patients with rare hereditary deficiency of hypoxanthine-guanine phosphoribosyl-transferase (HGPRT) such as Lesch-Nyhan and Kelley-Seegmiller syndrome.
Immunizations

During treatment with mycophenolic acid delayed release tablets, the use of live attenuated vaccines should be avoided and patients should be advised that vaccinations may be less effective (see PRECAUTIONS, Drug Interactions, Live Vaccines).

Information for Patients

See Medication Guide

- Inform females of reproductive potential that use of mycophenolic acid delayed release tablets during pregnancy is associated with an increased risk of first trimester pregnancy loss and an increased risk of congenital malformations, and advise them as to the appropriate steps to manage these risks including that they must use acceptable contraception (see WARNINGS: Embryofetal Toxicity, PRECAUTIONS: Pregnancy Exposure Prevention and Planning).

- Discuss pregnancy testing, pregnancy prevention and planning with females of reproductive potential. In the event of a positive pregnancy test, the maternal benefits of mycophenolate treatment may outweigh the risks to the fetus in certain situations.

- Females of reproductive potential must use acceptable birth control during entire mycophenolic acid delayed release tablets therapy and for 6 weeks after stopping mycophenolic acid delayed release tablets, unless the patient chooses to avoid heterosexual sexual intercourse completely (abstinence) (see PRECAUTIONS: Pregnancy Exposure Prevention and Planning, Table 4).

- For patients who are considering pregnancy, discuss appropriate alternative immunosuppressants with less potential for embryofetal toxicity. Risks and benefits of mycophenolic acid delayed release tablets should be discussed with the patient.

- It is recommended that mycophenolic acid delayed release tablets be administered on an empty stomach, one hour before or two hours after food intake (see DOSAGE AND ADMINISTRATION).

- In order to maintain the integrity of the enteric coating of the tablet, patients should be instructed not to crush, chew, or cut mycophenolic acid delayed release tablets and to swallow the tablets whole.

- Give patients complete dosage instructions and inform them about the increased risk of lymphoproliferative disease and certain other malignancies.

- Inform patients that they need repeated appropriate laboratory tests while they are taking mycophenolic acid delayed release tablets.

- Advise patients that they should not breastfeed during mycophenolic acid delayed release tablets therapy.

Laboratory Tests

Complete blood count should be performed weekly during the first month, twice monthly for the second and the third month of treatment, then monthly through the first year. If neutropenia develops (ANC <1.3x10^3/µL), dosing with mycophenolic acid delayed release tablets should be interrupted or the dose reduced, appropriate tests performed, and the patient managed accordingly (see WARNINGS).

Drug Interactions

The following drug interaction studies have been conducted with mycophenolic acid delayed release tablets:
Gastroprotective agents

Antacids with magnesium and aluminum hydroxides:

Absorption of a single dose of mycophenolic acid delayed release tablets was decreased when administered to 12 stable renal transplant patients also taking magnesium-aluminum-containing antacids (30 mL): the mean C_{max} and AUC_{(0-t)} values for MPA were 25% and 37% lower, respectively, than when mycophenolic acid delayed release tablets was administered alone under fasting conditions. It is recommended that mycophenolic acid delayed release tablets and antacids not be administered simultaneously.

Proton Pump Inhibitors: In a study conducted in 12 healthy volunteers, the pharmacokinetics of MPA were observed to be similar when a single dose of 720 mg mycophenolic acid delayed release tablets was administered alone and following concomitant administration of mycophenolic acid delayed release tablets and pantoprazole, which was administered at a dose of 40 mg BID for 4 days.

Cyclosporine: When studied in stable renal transplant patients, cyclosporine, USP (MODIFIED) pharmacokinetics were unaffected by steady-state dosing of mycophenolic acid delayed release tablets.

The following recommendations are derived from drug interaction studies conducted following the administration of mycophenolate mofetil:

**Acyclovir/Ganciclovir:** May be taken with mycophenolic acid delayed release tablets; however, during the period of treatment, physicians should monitor blood cell counts. Both acyclovir/ganciclovir and MPAG concentrations are increased in the presence of renal impairment, their coexistence may compete for tubular secretion and further increase in the concentrations of the two.

**Azathioprine/Mycophenolate Mofetil:** Given that azathioprine and mycophenolate mofetil inhibit purine metabolism, it is recommended that mycophenolic acid delayed release tablets not be administered concomitantly with azathioprine or mycophenolate mofetil.

**Cholestyramine and Drugs that Bind Bile Acids:** These drugs interrupt enterohepatic recirculation and reduce MPA exposure when coadministered with mycophenolate mofetil. Therefore, do not administer mycophenolic acid delayed release tablets with cholestyramine or other agents that may interfere with enterohepatic recirculation or drugs that may bind bile acids, for example bile acid sequestrates or oral activated charcoal, because of the potential to reduce the efficacy of mycophenolic acid delayed release tablets.

**Oral Contraceptives:** In a drug-drug interaction study, mean levonorgesterol AUC was decreased by 15% when coadministered with mycophenolate mofetil. Although mycophenolic acid delayed release tablets may not have any influence on the ovulation-suppressing action of oral contraceptives it is recommended to co-administer mycophenolic acid delayed release tablets with hormonal contraceptives, (e.g. birth control pill, transdermal patch, vaginal ring, injection, and implant) with caution and additional barrier contraceptive methods must be used. (see PRECAUTIONS: Pregnancy Exposure Prevention and Planning).

**Live Vaccines:** During treatment with mycophenolic acid delayed release tablets, the use of live attenuated vaccines should be avoided and patients should be advised that vaccinations may be less effective. Influenza vaccination may be of value. Prescribers should refer to national guidelines for influenza vaccination (see PRECAUTIONS, Immunizations).

Drugs that alter the gastrointestinal flora may interact with mycophenolic acid delayed release tablets by disrupting enterohepatic recirculation. Interference of MPAG hydrolysis may lead to less MPA available for absorption.

Carcinogenesis, Mutagenesis, Impairment of Fertility

In a 104-week oral carcinogenicity study in rats, mycophenolate sodium was not tumorigenic at daily doses up to 9 mg/kg, the highest dose tested. This dose resulted in approximately 0.6 to1.2 times the systemic exposure (based upon plasma AUC) observed in renal transplant patients at the recommended dose of 1.44 g/day. Similar results were observed in a parallel study in rats performed with mycophenolate mofetil. In a 104-week oral
carcinogenicity study in mice, mycophenolate mofetil was not tumorigenic at a daily dose level as high as 180 mg/kg (which corresponds to 0.6 times the proposed mycophenolate sodium therapeutic dose based upon body surface area).

The genotoxic potential of mycophenolate sodium was determined in five assays. Mycophenolate sodium was genotoxic in the mouse lymphoma/thymidine kinase assay the micronucleus test in V79 Chinese hamster cells and the in vivo mouse micronucleus assay. Mycophenolate sodium was not genotoxic in the bacterial mutation assay (Salmonella typhimurium TA 1535, 97a, 98, 100, & 102) or the chromosomal aberration assay in human lymphocytes. Mycophenolate mofetil generated similar genotoxic activity. The genotoxic activity of MPA is probably due to the depletion of the nucleotide pool required for DNA synthesis as a result of the pharmacodynamic mode of action of MPA (inhibition of nucleotide synthesis).

Mycophenolate sodium had no effect on male rat fertility at daily oral doses as high as 18 mg/kg and exhibited no testicular or spermatogenic effects at daily oral doses of 20 mg/kg for 13 weeks (approximately two-fold the therapeutic systemic exposure of MPA). No effects on female fertility were seen up to a daily dose of 20 mg/kg, which was approximately three-fold higher than the recommended therapeutic dose based upon systemic exposure.

Pregnancy

Pregnancy Category D (See WARNINGS)

Following oral or IV administration, MMF is metabolized to mycophenolic acid (MPA), the active ingredient in mycophenolic acid delayed release tablets and the active form of the drug. Use of MMF during pregnancy is associated with an increased risk of first trimester pregnancy loss and an increased risk of congenital malformations, especially external ear and other facial abnormalities including cleft lip and palate, and anomalies of the distal limbs, heart, esophagus, and kidney. In animal studies, congenital malformations and pregnancy loss occurred when pregnant rats and rabbits received mycophenolic acid at dose multiples similar to and less than clinical doses. If this drug is used during pregnancy, or if the patient becomes pregnant while taking this drug, the patient should be apprised of the potential hazard to the fetus.

Risks and benefits of mycophenolic acid delayed release tablets should be discussed with the patient. When appropriate, consider alternative immunosuppressants with less potential for embryofetal toxicity. In certain situations, the patient and her healthcare practitioner may decide that the maternal benefits outweigh the risks to the fetus. For those females using mycophenolic acid delayed release tablets at any time during pregnancy and those becoming pregnant within 6 weeks of discontinuing therapy, the healthcare practitioner should report the pregnancy to the Mycophenolate Pregnancy Registry (1800-617-8191). The healthcare practitioner should strongly encourage the patient to enroll in the pregnancy registry. The information provided to the registry will help the Health Care Community to better understand the effects of mycophenolate in pregnancy.

In the National Transplantation Pregnancy Registry (NTPR), there were data on 33 MMF-exposed pregnancies in 24 transplant patients; there were 15 spontaneous abortions (45%) and 18 live-born infants. Four of these 18 infants had structural malformations (22%). In postmarketing data (collected from 1995 to 2007) on 77 women exposed to systemic MMF during pregnancy, 25 had spontaneous abortions and 14 had a malformed infant or fetus. Six of 14 malformed offspring had ear abnormalities. Because these postmarketing data are reported voluntarily, it is not always possible to reliably estimate the frequency of particular adverse outcomes. These malformations are similar to findings in animal reproductive toxicology studies. For comparison, the background rate for congenital anomalies in the United States is about 3%, and NTPR data show a rate of 4 to 5% among babies born to organ transplant patients using other immunosuppressive drugs. There are no relevant qualitative or quantitative differences in the teratogenic potential of mycophenolate sodium and mycophenolate mofetil.

In a teratology study performed with mycophenolate sodium in rats, at a dose as low as 1 mg/kg, malformations in the offspring were observed, including anophthalmia, exencephaly and umbilical hernia. The systemic exposure at this dose represents 0.05 times the clinical exposure at the dose of 1.44 g/day mycophenolic acid delayed release
tablets. In teratology studies in rabbits, fetal resorptions and malformations occurred from 80 mg/kg/day, in the absence of maternal toxicity (dose levels are equivalent to about 0.8 times the recommended clinical dose, corrected for BSA).

**Nursing Mothers**

It is not known whether MPA is excreted in human milk. Because of the potential for serious adverse reactions in nursing infants from MPA, a decision should be made whether to discontinue the drug or to discontinue nursing while on treatment or within 6 weeks after stopping therapy, taking into account the importance of the drug to the mother.

**Pediatric Use**

*De novo Renal Transplant*

The safety and effectiveness of mycophenolic acid delayed release tablets in *de novo* pediatric renal transplant patients have not been established.

*Stable Renal Transplant*

There are no pharmacokinetic data available for pediatric patients <5 years. The safety and effectiveness of mycophenolic acid delayed release tablets have been established in the age group 5 to 16 years in stable pediatric renal transplant patients. Use of mycophenolic acid delayed release tablets in this age group is supported by evidence from adequate and well-controlled studies of mycophenolic acid in stable adult renal transplant patients. Limited pharmacokinetic data are available for stable pediatric renal transplant patients in the age group 5 to 16 years. Pediatric doses for patients with BSA <1.19 m$^2$ cannot be accurately administered using currently available formulations of mycophenolic acid delayed release tablets (see CLINICAL PHARMACOLOGY, Special Populations and DOSAGE AND ADMINISTRATION).

**Geriatric Use**

Patients ≥65 years may generally be at increased risk of adverse drug reactions due to immunosuppression. Clinical studies of mycophenolic acid delayed release tablets did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. Other reported clinical experience has not identified differences in responses between the elderly and younger patients. In general, dose selection for an elderly patient should be cautious, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy.

**ADVERSE REACTIONS**

The incidence of adverse events for mycophenolic acid delayed release tablets (mycophenolic acid) was determined in randomized, comparative, active-controlled, double-blind, double-dummy trials in prevention of acute rejection in *de novo* and maintenance kidney transplant patients.

The principal adverse reactions associated with the administration of mycophenolic acid delayed release tablets include constipation, nausea, and urinary tract infection in *de novo* patients and nausea, diarrhea and nasopharyngitis in maintenance patients.

Adverse events reported in ≥20% of patients receiving mycophenolic acid delayed release tablets or mycophenolate mofetil in the 12-month *de novo* renal study and maintenance renal study, when used in combination with cyclosporine, USP (MODIFIED) and corticosteroids, are listed in Table 5. Adverse event rates were similar between mycophenolic acid delayed release tablets and mycophenolate mofetil in both *de novo* and maintenance patients.

**Table 5 Adverse Events (%) in Controlled de novo and Maintenance Renal Studies Reported in ≥20% of Patients**

<table>
<thead>
<tr>
<th>de novo Renal Study</th>
<th>Maintenance Renal Study</th>
</tr>
</thead>
</table>

Page 13 of 25
<table>
<thead>
<tr>
<th></th>
<th>Mycophenolic Acid Delayed Release Tablets 1.44 g/day (n=213)</th>
<th>Mycophenolate Mofetil 2 g/day (n=210)</th>
<th>Mycophenolic Acid Delayed Release Tablets 1.44 g/day (n=159)</th>
<th>Mycophenolate Mofetil 2 g/day (n=163)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood and Lymphatic System Disorders</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anemia</td>
<td>21.6</td>
<td>21.9</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Leukopenia</td>
<td>19.2</td>
<td>20.5</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Gastrointestinal System Disorders</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constipation</td>
<td>38.0</td>
<td>39.5</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Nausea</td>
<td>29.1</td>
<td>27.1</td>
<td>24.5</td>
<td>19.0</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>23.5</td>
<td>24.8</td>
<td>21.4</td>
<td>24.5</td>
</tr>
<tr>
<td>Vomiting</td>
<td>23.0</td>
<td>20.0</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Dyspepsia</td>
<td>22.5</td>
<td>19.0</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Infections and Infestations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>29.1</td>
<td>33.3</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>CMV Infection</td>
<td>20.2</td>
<td>18.1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Nervous System Disorder</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insomnia</td>
<td>23.5</td>
<td>23.8</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Surgical and Medical Procedure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Operative Pain</td>
<td>23.9</td>
<td>18.6</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Table 6 summarizes the incidence of opportunistic infections in de novo and maintenance transplant patients, which were similar in both treatment groups.

**Table 6 Viral and Fungal Infections (%) Reported Over 0-12 Months**

<table>
<thead>
<tr>
<th></th>
<th>de novo Renal Study</th>
<th>Maintenance Renal Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mycophenolic Acid Delayed Release Tablets 1.44 g/day (n = 213)</td>
<td>Mycophenolate Mofetil 2 g/day (n = 210)</td>
</tr>
<tr>
<td></td>
<td>(%)</td>
<td>(%)</td>
</tr>
<tr>
<td>Any Cytomegalovirus</td>
<td>21.6</td>
<td>20.5</td>
</tr>
<tr>
<td>- Cytomegalovirus Disease</td>
<td>4.7</td>
<td>4.3</td>
</tr>
<tr>
<td>Herpes Simplex</td>
<td>8.0</td>
<td>6.2</td>
</tr>
<tr>
<td>Herpes Zoster</td>
<td>4.7</td>
<td>3.8</td>
</tr>
<tr>
<td>Any Fungal Infection</td>
<td>10.8</td>
<td>11.9</td>
</tr>
<tr>
<td>- Candida NOS</td>
<td>5.6</td>
<td>6.2</td>
</tr>
<tr>
<td>- Candida Albicans</td>
<td>2.3</td>
<td>3.8</td>
</tr>
</tbody>
</table>
The following opportunistic infections occurred rarely in the above controlled trials: aspergillus and cryptococcus. The incidence of malignancies and lymphoma is consistent with that reported in the literature for this patient population. Lymphoma developed in 2 de novo patients (0.9%), (one diagnosed 9 days after treatment initiation) and in 2 maintenance patients (1.3%) (one was AIDS-related), receiving mycophenolic acid delayed release tablets with other immunosuppressive agents in the 12-month controlled clinical trials. Non-melanoma skin carcinoma occurred in 0.9% de novo and 1.8% maintenance patients. Other types of malignancy occurred in 0.5% de novo and 0.6% maintenance patients. The following adverse events were reported between 3% to <20% incidence in de novo and maintenance patients treated with mycophenolic acid delayed release tablets in combination with cyclosporine and corticosteroids are listed in Table 7.

Table 7 Adverse Events Reported in 3% to <20% of Patients Treated with Mycophenolic Acid Delayed Release Tablets in Combination with Cyclosporine* and Corticosteroids

<table>
<thead>
<tr>
<th>adverse event category</th>
<th>de novo Renal Study</th>
<th>Maintenance Renal Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood and Lymphatic Disorders</td>
<td>Lymphocele, thrombocytopenia</td>
<td>Leukopenia, anemia</td>
</tr>
<tr>
<td>Cardiac Disorder</td>
<td>Tachycardia</td>
<td></td>
</tr>
<tr>
<td>Eye Disorder</td>
<td>Vision blurred</td>
<td></td>
</tr>
<tr>
<td>Endocrine Disorders</td>
<td>Cushingoid, hirsutism</td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal Disorders</td>
<td>Abdominal pain upper, flatulence, abdominal distension, sore throat, abdominal pain lower, abdominal pain, gingival hyperplasia, loose stool</td>
<td>Vomiting, dyspepsia, abdominal pain, constipation, gastroesophageal reflux disease, loose stool, flatulence, abdominal pain upper</td>
</tr>
<tr>
<td>General Disorders and Administration Site Conditions</td>
<td>Edema, edema lower limb, pyrexia, pain, fatigue, edema peripheral, chest pain</td>
<td>Fatigue, pyrexia, edema, chest pain, peripheral edema</td>
</tr>
<tr>
<td>Infections and Infestations</td>
<td>Nasopharyngitis, herpes simplex, upper respiratory tract infection, oral candidiasis, herpes zoster, sinusitis, wound infection, implant infection, pneumonia</td>
<td>Nasopharyngitis, upper respiratory tract infection, urinary tract infection, influenza, sinusitis</td>
</tr>
<tr>
<td>Injury, Poisoning, and Procedural Complications</td>
<td>Drug toxicity</td>
<td>Post procedural pain</td>
</tr>
<tr>
<td>Investigations</td>
<td>Blood creatinine increased, hemoglobin decrease, blood pressure increased, liver function tests abnormal</td>
<td>Blood creatinine increase, weight increase</td>
</tr>
<tr>
<td>Metabolism and Nutrition Disorders</td>
<td>Hypocalcemia, hyperuricemia, hyperlipidemia, hypokalemia, hypophosphatemia, hypercholesterolemia, hyperkalemia, hypomagnesemia, diabetes mellitus, hyperphosphatemia, dehydration, fluid overload, hyperglycemia, hypercalcemia</td>
<td>Dehydration, hypokalemia, hypercholesterolemia</td>
</tr>
<tr>
<td>Musculoskeletal and Connective Tissue Disorders</td>
<td>Back pain, arthralgia, pain in limb, muscle cramps, myalgia</td>
<td>Arthralgia, pain in limb, back pain, muscle cramps, peripheral swelling, myalgia</td>
</tr>
<tr>
<td>Nervous System Disorders</td>
<td>Tremor, headache, dizziness</td>
<td>Headache, dizziness</td>
</tr>
</tbody>
</table>
The following additional adverse reactions have been associated with the exposure to mycophenolic acid (MPA) when administered as a sodium salt or as mofetil ester:

**Gastrointestinal:** Colitis (sometimes caused by CMV), pancreatitis, esophagitis, intestinal perforation, gastrointestinal hemorrhage, gastric ulcers, duodenal ulcers, and ileus (see PRECAUTIONS).

**Resistance Mechanism Disorders:** Serious life-threatening infections such as meningitis and infectious endocarditis have been reported occasionally and there is evidence of a higher frequency of certain types of serious infections such as tuberculosis and atypical mycobacterial infection.

**Respiratory:** Interstitial lung disorders, including fatal pulmonary fibrosis, have been reported rarely with MPA administration and should be considered in the differential diagnosis of pulmonary symptoms ranging from dyspnea to respiratory failure in post-transplant patients receiving MPA derivatives.

**Postmarketing Experience**

The following adverse reactions have been identified during post-approval use of mycophenolic acid delayed release tablets. Because these reactions are reported voluntarily from a population of uncertain size, reliably estimating their frequency or establishing a causal relationship to drug exposure is not always possible.

**Congenital disorder:** Embryofetal toxicity: Congenital malformations and an increased incidence of first trimester pregnancy loss have been reported following exposure to mycophenolate mofetil (MMF) during pregnancy (see PRECAUTIONS: Pregnancy).

**Infections:** Polyomavirus-associated nephropathy (PVAN), especially due to BK virus infection, has been observed in patients receiving immunosuppressents, including mycophenolic acid delayed release tablets. This infection is associated with serious outcomes, including deteriorating renal function and renal graft loss (see WARNINGS, Polyomavirus Infections). Cases of progressive multifocal leukoencephalopathy (PML), sometimes fatal, have been reported in patients treated with MPA derivatives (see WARNINGS, Polyomavirus Infections).

**Hematologic:** Cases of pure red cell aplasia (PRCA) have been reported in patients treated with MPA derivatives in combination with other immunosuppressive agents (see WARNINGS).

**Dermatologic:** Cases of rash have been reported in patients treated with MPA derivatives.
OVERDOSAGE

Signs and Symptoms
There has been no reported experience of acute overdose of mycophenolic acid delayed release tablets (mycophenolic acid) in humans.

Possible signs and symptoms of acute overdose could include the following: hematological abnormalities such as leukopenia and neutropenia, and gastrointestinal symptoms such as abdominal pain, diarrhea, nausea and vomiting, and dyspepsia.

Treatment and Management
General supportive measures and symptomatic treatment should be followed in all cases of overdosage. Although dialysis may be used to remove the inactive metabolite mycophenolic acid glucuronide (MPAG), it would not be expected to remove clinically significant amounts of the active moiety MPA due to the 98% plasma protein binding of MPA. By interfering with enterohepatic circulation of mycophenolic acid (MPA), activated charcoal or bile acid sequestrants, such as cholestyramine, may reduce the systemic MPA exposure.

DOSAGE AND ADMINISTRATION

The recommended dose of mycophenolic acid delayed release tablets (mycophenolic acid) is 720 mg administered twice daily (1440 mg total daily dose) on an empty stomach, one hour before or two hours after food intake (see CLINICAL PHARMACOLOGY, Food Effect).

Mycophenolic acid delayed release tablets and mycophenolate mofetil (MMF) tablets and capsules should not be used interchangeably without physician supervision because the rate of absorption following the administration of these two products is not equivalent.

Patients are to be instructed that mycophenolic acid delayed release tablets should not be crushed, chewed, or cut prior to ingesting. The tablets should be swallowed whole in order to maintain the integrity of the enteric coating.

Pediatric: Based on a pharmacokinetic study conducted in stable renal pediatric transplant patients, the recommended dose of mycophenolic acid delayed release tablets in stable pediatric patients is 400 mg/m² body surface area (BSA) administered twice daily (up to a maximum dose of 720 mg administered twice daily). Patients with a BSA of 1.19 to 1.58 m² may be dosed either with three mycophenolic acid delayed release tablets 180 mg tablets or one 180 mg tablet plus one 360 mg tablet twice daily (1080 mg daily dose). Patients with a BSA of >1.58 m² may be dosed either with four mycophenolic acid delayed release tablets 180 mg tablets or two mycophenolic acid delayed release tablets 360 mg tablets twice daily (1440 mg daily dose). Pediatric doses for patients with BSA <1.19 m² cannot be accurately administered using currently available formulations of mycophenolic acid delayed release tablets.

Geriatrics: The maximum recommended dose is 720 mg administered twice daily.

Treatment During Rejection Episodes
Renal transplant rejection does not lead to changes in mycophenolic acid (MPA) pharmacokinetics; dosage reduction or interruption of mycophenolic acid delayed release tablets is not required.

Patients with Renal Impairment
No dose adjustments are needed in patients experiencing delayed renal graft function post-operatively. Patients with severe chronic renal impairment (GFR < 25 mL/min/1.73 m² BSA) should be carefully followed for potential adverse reactions due to increase in free MPA and total mycophenolic acid glucuronide (MPAG) concentrations (see CLINICAL PHARMACOLOGY, Pharmacokinetics: Special Populations).

Patients with Hepatic Impairment
No dose adjustments are needed for renal transplant patients with hepatic parenchymal disease. However, it is not known whether dosage adjustments are needed for hepatic disease with other etiologies (see CLINICAL PHARMACOLOGY, Pharmacokinetics).

HOW SUPPLIED

Mycophenolic Acid Delayed Release Tablets are supplied as:

180 mg tablet: Light green, round, slightly biconvex bevelled edge enteric coated tablet. Engraved “MYC” over “180” on one side, “APO” on the other side, containing 180 mg mycophenolic acid (MPA) as mycophenolate sodium.

Bottles of 30………………………………………………………………………………NDC 60505-2965-3
Bottles of 60……………………………………………………………………………….NDC 60505-2965-6
Bottles of 90……………………………………………………………………………….NDC 60505-2965-9
Bottles of 100……………………………………………………………………………...NDC 60505-2965-1
Bottles of 120……………………………………………………………………………...NDC 60505-2965-7
Bottles of 500……………………………………………………………………………...NDC 60505-2965-5
Bottles of 1000……………………………………………………………………………..NDC 60505-2965-8
Blister of 100………………………………………………………………………………NDC 60505-2965-0

Storage

Store at 25°C (77°F); excursions permitted to 15-30°C (59-86°F) [see USP Controlled Room Temperature]. Protect from moisture.

Dispense in a tight container (USP).

Handling

Tablets should not be crushed or cut.

APOTEX INC.

MYCOPHENOLIC ACID DELAYED RELEASE TABLETS

180 mg

Manufactured by:
Apotex Inc.
Toronto, Ontario
Canada M9L 1T9

Manufactured for:
Apotex Corp.
Weston, Florida
Mycophenolic Acid Delayed Release Tablets
(my-co-fen-o-lic acid)

Read the Medication Guide that comes with mycophenolic acid delayed release tablets before you start taking it and each time you get a refill. There may be new information. This Medication Guide does not take the place of talking to your healthcare provider about your medical condition or treatment. If you have any questions about mycophenolic acid delayed release tablets, ask your doctor.

What is the most important information I should know about mycophenolic acid delayed release tablets?

Mycophenolic acid delayed release tablets can cause serious side effects including:

- **Increased risk of loss of pregnancy (miscarriage) and higher risk of birth defects.** Females who take mycophenolic acid delayed release tablets during pregnancy, have a higher risk of miscarriage during the first 3 months (first trimester), and a higher risk that their baby will be born with birth defects.

  If you are a female who can become pregnant:

  - your doctor must talk with you about acceptable birth control methods (contraceptive counseling) while taking mycophenolic acid delayed release tablets.
  - you should have one pregnancy test immediately before starting mycophenolic acid delayed release tablets and another pregnancy test 8 to 10 days later. Pregnancy tests should be repeated during routine follow-up visits with your doctor. Talk to your doctor about the results of all of your pregnancy tests.
  - you must use acceptable birth control during your entire mycophenolic acid delayed release tablets therapy and for 6 weeks after stopping mycophenolic acid delayed release tablets, unless at anytime you choose to avoid sexual intercourse (abstinence) with a man completely. Mycophenolic acid delayed release tablets decrease blood levels of the hormones in birth control pills that you take by mouth. Birth control pills may not work as well while you take mycophenolic acid delayed release tablets and you could become pregnant. If you decide to take birth control pills while using mycophenolic acid delayed release tablets you must also use another form of birth control. Talk to your doctor about other birth control methods that can be used while taking mycophenolic acid delayed release tablets.

If you plan to become pregnant, talk with your doctor. Your doctor will decide if other medicines to prevent rejection may be right for you.

- **If you become pregnant while taking mycophenolic acid delayed release tablets, do not stop taking mycophenolic acid delayed release tablets. Call your doctor right away.** In certain situations, you and your doctor may decide that taking mycophenolic acid delayed release tablets is more important to your health than the possible risks to your unborn baby.

- You and your doctor should report your pregnancy to
  - Mycophenolate Pregnancy Registry (1-800-617-8191)

  The purpose of this registry is to gather information about the health of you and your baby.

- **Increased risk of getting serious infections.** Mycophenolic acid delayed release tablets weakens the body’s immune system and affects your ability to fight infections. Serious infections can happen with mycophenolic acid delayed release tablets and can lead to death. Types of infections can include:

  - **Viral infections.** Certain viruses can live in your body and cause active infections when your immune system is weak. Viral infections that can happen with mycophenolic acid delayed release capsules include:
    - Shingles, other herpes infections, and cytomegalovirus (CMV). CMV can cause serious
tissue and blood infections.

- BK virus. BK virus can affect how your kidney works and cause your transplanted kidney to fail.
  - A brain infection called Progressive Multifocal Leukoencephalopathy (PML). In some patients mycophenolic acid delayed release tablets may cause an infection of the brain that may cause death. You are at risk for this brain infection because you have a weakened immune system. You should tell your healthcare provider right away if you have any of the following symptoms:
    - Weakness on one side of the body
    - You do not care about things that you usually care about (apathy)
    - You are confused or have problems thinking
    - You cannot control your muscles

- Fungal infections. Yeast and other types of fungal infections can happen with mycophenolic acid delayed release tablets and cause serious tissue and blood infections. See "What are the possible side effects of mycophenolic acid delayed release tablets?"

Call your doctor right away if you have any of these signs and symptoms of infection:

- Temperature of 100.5°F or greater
- Cold symptoms, such as a runny nose or sore throat
- Flu symptoms, such as an upset stomach, stomach pain, vomiting or diarrhea
- Earache or headache
- Pain during urination or you need to urinate often
- White patches in the mouth or throat
- Unexpected bruising or bleeding
- Cuts, scrapes or incisions that are red, warm and oozing pus

- Increased risk of getting certain cancers. People who take mycophenolic acid delayed release tablets have a higher risk of getting lymphoma, and other cancers, especially skin cancer. Tell your doctor if you have:
  - unexplained fever, tiredness that does not go away, weight loss, or lymph node swelling
  - a brown or black skin lesion with uneven borders, or one part of the lesion does not look like other parts
  - a change in the size or color of a mole
  - a new skin lesion or bump
  - any other changes to your health

See the section "What are the possible side effects of mycophenolic acid delayed release tablets?" for other serious side effects.

What is mycophenolic acid delayed release tablets?

Mycophenolic acid delayed release tablets is a prescription medicine given to prevent rejection (antirejection medicine) in people who have received a kidney transplant. Rejection is when the body's immune system senses the new organ as "foreign" and attacks it.

Mycophenolic acid delayed release tablets are used with other medicines containing cyclosporine (Sandimmune®, Gengraf®, and Neoral®) and corticosteroids.
Mycophenolic acid delayed release tablets can be used to prevent rejection in children who are 5 years or older and are stable after having a kidney transplant. It is not known if mycophenolic acid delayed release tablets is safe and works in children younger than 5 years. It is not known how mycophenolic acid delayed release tablets work in children who have just received a new kidney transplant.

Who should not take mycophenolic acid delayed release tablets?
Do not take mycophenolic acid delayed release tablets if you are allergic to mycophenolic acid, mycophenolic sodium, mycophenolate mofetil, or any of the ingredients in mycophenolic acid delayed release tablets. See the end of this Medication Guide for a complete list of ingredients in mycophenolic acid delayed release tablets.

What should I tell my doctor before I start taking mycophenolic acid delayed release tablets?
Tell your healthcare provider about all of your medical conditions, including if you:

- have any digestive problems, such as ulcers
- plan to receive any vaccines. You should not receive live vaccines while you take mycophenolic acid delayed release tablets. Some vaccines may not work as well during treatment with mycophenolic acid delayed release tablets.
- have Lesch-Nyhan or Kelley-Seegmiller syndrome or another rare inherited deficiency of hypoxanthine-guanine phosphoribosyl-transferase (HGPRT). You should not take mycophenolic acid delayed release tablets if you have one of these disorders.
- are pregnant or planning to become pregnant. See "What is the most important information I should know about mycophenolic acid delayed release tablets?"
- are breastfeeding or plan to breastfeed. It is not known if mycophenolic acid passes into breast milk. You and your doctor will decide if you will take mycophenolic acid delayed release tablets or breast-feed.

Tell your doctor about all the medicines you take, including prescription and nonprescription medicines, vitamins, and herbal supplements.
Some medicines may affect the way mycophenolic acid delayed release tablets work and mycophenolic acid delayed release tablets may affect how some medicines work. Especially tell your doctor if you take:

- birth control pills (oral contraceptives). See "What is the most important information I should know about mycophenolic acid delayed release tablets?"
- antacids that contain aluminum or magnesium. Mycophenolic acid delayed release tablets and antacids should not be taken at the same time.
- acyclovir (Zovirax®), Ganciclovir (Cytovene® IV, and Valcyte®)
- azathioprine (Azasan®, Imuran®)
- cholestyramine (Questran® Light, Questran®, Locholest Light, Prevalite®)

Know the medicines you take. Keep a list of your medicines with you to show your healthcare provider and pharmacist when you get a new medicine. Do not take any new medicine without talking to your doctor.

How should I take mycophenolic acid delayed release tablets?

- Take mycophenolic acid delayed release tablets exactly as prescribed. Your healthcare provider will tell you how much mycophenolic acid delayed release tablets to take.
- Do not stop taking or change your dose of mycophenolic acid delayed release tablets without talking to your healthcare provider.
- Take mycophenolic acid delayed release tablets on an empty stomach, either 1 hour before or 2 hours after a meal.
Swallow mycophenolic acid delayed release tablets whole. Do not crush, chew, or cut mycophenolic acid delayed release tablets. The mycophenolic acid delayed release tablets have a coating so that the medicine will pass through your stomach and dissolve in your intestine.

- If you forget to take mycophenolic acid delayed release tablets, take it as soon as you remember and then take your next dose at its regular time. If it is almost time for your next dose, skip the missed dose. Do not take two doses at the same time. Call your doctor or pharmacist if you are not sure what to do.

- If you take more than the prescribed dose of mycophenolic acid delayed release tablets, call your doctor right away.

- Do not change (substitute) between using mycophenolic acid delayed release tablets and mycophenolate mofetil tablets, capsules, or oral suspension for one another unless your healthcare provider tells you to. These medicines are absorbed differently. This may affect the amount of medicine in your blood.

- Be sure to keep your appointments at your transplant clinic. During these visits, your doctor may perform regular blood tests.

What should I avoid while taking mycophenolic acid delayed release tablets?

Avoid pregnancy. See "What is the most important information I should know about mycophenolic acid delayed release tablets?"

- Limit the amount of time you spend in sunlight. Avoid using tanning beds and sunlamps. People who take mycophenolic acid delayed release tablets have a higher risk of getting skin cancer. See "What is the most important information I should know about mycophenolic acid delayed release tablets?" Wear protective clothing when you are in the sun and use a sunscreen with a high sun protection factor (SPF 30 and above). This is especially important if your skin is fair (light colored) or you have a family history of skin cancer.

- Elderly patients 65 years of age or older may have more side effects with mycophenolic acid delayed release tablets because of a weaker immune system.

What are the possible side effects of mycophenolic acid delayed release tablets?

Mycophenolic acid delayed release tablets can cause serious side effects. See "What is the most important information I should know about mycophenolic acid delayed release tablets?"

Stomach and intestinal bleeding can happen in people who take mycophenolic acid delayed release tablets. Bleeding can be severe and you may have to be hospitalized for treatment.

The most common side effects of taking mycophenolic acid delayed release tablets include:

In people with a new transplant:

- low blood cell counts
  - red blood cells
  - white blood cells
  - platelets
- constipation
- nausea
- diarrhea
- vomiting
• urinary tract infections
• stomach upset

In people who take mycophenolic acid delayed release tablets for a long time (long-term) after transplant:

• low blood cell counts
  o red blood cells
  o white blood cells
• nausea
• diarrhea
• sore throat

Your healthcare provider will do blood tests before you start taking mycophenolic acid delayed release tablets and during treatment with mycophenolic acid delayed release tablets to check your blood cell counts. Tell your healthcare provider right away if you have any signs of infection (see "What is the most important information I should know about mycophenolic acid delayed release tablets?"), or any unexpected bruising or bleeding. Also, tell your healthcare provider if you have unusual tiredness, dizziness or fainting.

These are not all the possible side effects of mycophenolic acid delayed release tablets. Your healthcare provider may be able to help you manage these side effects.

Call your doctor for medical advice about side effects.

You may report side effects to

• FDA MedWatch at 1-800-FDA-1088 or
• Apotex Corp. at 1-800-667-4708.

How should I store mycophenolic acid delayed release tablets?

• Store mycophenolic acid delayed release tablets at room temperature, 59° to 86°F (15° to 30°C). Mycophenolic acid delayed release tablets does not need to be refrigerated.
• Keep the container tightly closed. Store mycophenolic acid delayed release tablets in a dry place.
• Keep mycophenolic acid delayed release tablets and all medicines out of the reach of children.

General information about mycophenolic acid delayed release tablets

Medicines are sometimes prescribed for purposes other than those listed in a Medication guide. Do not use mycophenolic acid delayed release tablets for a condition for which it was not prescribed. Do not give mycophenolic acid delayed release tablets to other people, even if they have the same symptoms you have. It may harm them.

This Medication Guide summarizes the most important information about mycophenolic acid delayed release tablets. If you would like more information, talk with your doctor. You can ask your doctor or pharmacist for information about mycophenolic acid delayed release tablets that is written for healthcare professionals. You can also call Apotex Corp. at 1-800-667-4708.

What are the ingredients in mycophenolic acid delayed release tablets?

Active ingredient: mycophenolic acid (as mycophenolate sodium)

Inactive ingredients: methylcellulose, sodium lauryl sulfate, stearic acid, colloidal silicon dioxide, hypromellose, polyethylene glycol, triethyl citrate, talc, titanium dioxide, methacrylic acid, yellow ferric oxide and indigotine.

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APOTEX INC.
MYCOPHENOLIC ACID DELAYED RELEASE TABLETS
180 mg

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