

For the use of a Registered Medical Practitioner or a Hospital or a Laboratory only OR for Specialist Use only

Capecitabine Tablets USP 500 mg

Capacer

Composition

Each film coated tablet contains :
Capecitabine USP 500 mg

Colours : Red oxide of Iron and Titanium Dioxide

Excipients with known effects: Lactose C

Dosage Form

Tablets

Pharmacology

Pharmacodynamics

Pharmacotherapeutic group: cytostatic (antimetabolite), ATC code: L01BC06

Capecitabine is a non-cytotoxic fluoropyrimidine carbamate, which functions as an orally administered precursor of the cytotoxic moiety 5-fluorouracil (5-FU). Capecitabine is activated via several enzymatic steps (see *Pharmacokinetics*). The enzyme involved in the final conversion to 5-FU, thymidine phosphorylase (ThyPase), is found in tumour tissues, but also in normal tissues, albeit usually at lower levels. In human cancer xenograft models capecitabine demonstrated a synergistic effect in combination with docetaxel, which may be related to the upregulation of thymidine phosphorylase by docetaxel.

There is evidence that the metabolism of 5-FU in the anabolic pathway blocks the methylation reaction of deoxyuridylic acid to thymidylic acid, thereby interfering with the synthesis of deoxyribonucleic acid (DNA). The incorporation of 5-FU also leads to inhibition of RNA and protein synthesis. Since DNA and RNA are essential for cell division and growth, the effect of 5-FU may be to create a thymidine deficiency that provokes unbalanced growth and death of a cell. The effects of DNA and RNA deprivation are most marked on those cells which proliferate more rapidly and which metabolise 5-FU at a more rapid rate.

Colon and colorectal cancer:

Monotherapy with capecitabine in adjuvant colon cancer

Data from one multicentre, randomised, controlled phase III clinical trial in patients with stage III (Dukes' C) colon cancer supports the use of capecitabine for the adjuvant treatment of patients with colon cancer (XACT Study; M66001). In this trial, 1987 patients were randomised to treatment with capecitabine (1250 mg/m² twice daily for 2 weeks followed by a 1-week rest period and given as 3-week cycles for 24 weeks) or 5-FU and leucovorin (Mayo Clinic regimen: 20 mg/m² leucovorin IV followed by 425 mg/m² IV bolus 5-FU, on days 1 to 5, every 28 days for 24 weeks). Capecitabine was at least equivalent to IV 5-FU/LV in disease-free survival in per protocol population (hazard ratio 0.92; 95% CI 0.80-1.06). In the all-randomised population, tests for difference of capecitabine vs 5-FU/LV in disease-free and overall survival showed hazard ratios of 0.88 (95% CI 0.77 – 1.01; p = 0.068) and 0.86 (95% CI 0.74 – 1.01; p = 0.060), respectively. The median follow up at the time of the analysis was 6.9 years. In a preplanned multivariate Cox analysis, superiority of capecitabine compared with bolus 5-FU/LV was demonstrated. The following factors were pre-specified in the statistical analysis plan for inclusion in the model: age, time from surgery to randomization, gender, CEA levels at baseline, lymph node(s) at baseline, and country. In the all-randomised population, capecitabine was shown to be superior to 5FU/LV for disease-free survival (hazard ratio 0.849; 95% CI 0.739 - 0.976; p = 0.0212), as well as for overall survival (hazard ratio 0.828; 95% CI 0.705 - 0.971; p = 0.0203).

Combination therapy in adjuvant colon cancer

Data from one multicentre, randomised, controlled phase 3 clinical trial in patients with stage III (Dukes' C) colon cancer supports the use of capecitabine in combination with oxaliplatin (XELOX) for the adjuvant treatment of patients with colon cancer (NO16968 study). In this trial, 944 patients were randomised to 3-week cycles for 24 weeks with capecitabine (1000 mg/m² twice daily for 2 weeks followed by a 1-week rest period) in combination with oxaliplatin (130 mg/m² intravenous infusion over 2-hours on day 1 every 3 weeks); 942 patients were randomized to bolus 5-FU and leucovorin. In the primary analysis for DFS in the ITT population, XELOX was shown to be significantly superior to 5-FU/LV (HR=0.80, 95% CI=[0.69; 0.93]; p=0.0045). The 3 year DFS rate was 71% for XELOX versus 67% for 5-FU/LV. The analysis for the secondary endpoint of RFS supports these results with a HR of 0.78 (95% CI=[0.67; 0.92]; p=0.0024) for XELOX vs. 5-FU/LV. XELOX showed a trend towards superior OS with a HR of 0.87 (95% CI=[0.72; 1.05]; p=0.1486) which translates into a 13% reduction in risk of death. The 5 year OS rate was 78% for XELOX versus 74% for 5-FU/LV. The efficacy data is based on a median observation time of 59 months for OS and 57 months for DFS. The rate 74 withdrawal due to adverse events was higher in the XELOX combination therapy arm (21%) as compared with that of the 5-FU/LV monotherapy arm (9%) in the ITT population.

Monotherapy with capecitabine in metastatic colorectal cancer

Data from two identically designed, multicentre, randomised, controlled phase III clinical trials (SO14695; SO14796) support the use of capecitabine for first line treatment of metastatic colorectal cancer. In these trials, 603 patients were randomised to treatment with capecitabine (1250 mg/m² twice daily for 2 weeks followed by a 1-week rest period and given as 3-week cycles). 604 patients were randomised to treatment with 5-FU and leucovorin (Mayo regimen: 20 mg/m² leucovorin IV followed by 425 mg/m² IV bolus 5-FU, on days 1 to 5, every 28 days). The overall objective response rates in the all-randomised population (investigator assessment) were 25.7% (capecitabine) vs. 16.7% (Mayo regimen); p <0.0002. The median time to progression was 140 days (capecitabine) vs. 144 days (Mayo regimen). Median survival was 392 days (capecitabine) vs. 391 days (Mayo regimen). Currently, no comparative data are available on capecitabine monotherapy in colorectal cancer in comparison with first line combination regimens.

Combination therapy in first-line treatment of metastatic colorectal cancer

Data from a multicentre, randomised, controlled phase III clinical study (NO16966) support the use of capecitabine in combination with oxaliplatin or in combination with oxaliplatin and bevacizumab for the first-line treatment of metastatic colorectal cancer. The study contained two parts: an initial 2-arm part in which 634 patients were randomised to two different treatment groups, including XELOX or FOLFOX-4, and a subsequent 2x2 factorial part in which 1401 patients were randomised to four different treatment groups, including XELOX plus placebo, FOLFOX-4 plus placebo, XELOX plus bevacizumab, and FOLFOX-4 plus bevacizumab. See table 1 for treatment regimens.

Table 1 Treatment Regimens in Study NO16966 (mCRC)

	Treatment	Starting Dose	Schedule
FOLFOX-4 or FOLFOX-4 + Bevacizumab	Oxaliplatin	85 mg/m ² IV 2 hr	Oxaliplatin on Day 1, every 2 weeks Leucovorin on Days 1 and 2, every 2 weeks
	Leucovorin	200 mg/m ² IV 2 hr	
	5-Fluorouracil	400 mg/m ² IV bolus, followed by 600 mg/ m ² IV 22 hr	5-fluorouracil IV bolus/infusion, each on Days 1 and 2, every 2 weeks
XELOX or XELOX+ Bevacizumab	Placebo or Bevacizumab	5 mg/kg IV 30-90 mins	Day 1, prior to FOLFOX-4, every 2 weeks
	Oxaliplatin	130 mg/m ² IV 2 hr	Oxaliplatin on Day 1, every 3 weeks Capecitabine oral twice daily for 2 weeks (followed by 1 week off-treatment)
5-Fluorouracil: IV bolus injection immediately after leucovorin	Capecitabine	1000 mg/m ² oral twice daily	
	Placebo or Bevacizumab	7.5 mg/kg IV 30-90 mins	Day 1, prior to XELOX, every 3 weeks

Non-inferiority of the XELOX-containing arms compared with the FOLFOX-4-containing arms in the overall comparison was demonstrated in terms of progression-free survival in the eligible patient population and the intent-to-treat population (see table 2). The results indicate that XELOX is equivalent to FOLFOX-4 in terms of overall survival (see table 2). A comparison of XELOX plus bevacizumab versus FOLFOX-4 plus bevacizumab was a pre-specified exploratory analysis. In this treatment subgroup comparison, XELOX plus bevacizumab was similar compared to FOLFOX-4 plus bevacizumab in terms of progression-free survival (hazard ratio 1.01; 97.5% CI 0.84 - 1.22). The median follow up at the time of the primary analyses in the intent-to-treat population was 1.5 years; data from analyses following an additional 1 year of follow up are also included in table 2. However, the on-treatment PFS analysis did not confirm the results of the general PFS and OS analysis; the hazard ratio of XELOX versus FOLFOX-4 was 1.24 with 97.5% CI 1.07 - 1.44. Although sensitivity analyses show that differences in regimen schedules and timing of tumor assessments impact the on-treatment PFS analysis, a full explanation for this result has not been found.

Table 2 Key efficacy results for the non-inferiority analysis of Study NO16966

PRIMARY ANALYSIS			
XELOX+XELOX+P/XELOX+BV (EPP*: N=967; ITT** [†] : N=1017)		FOLFOX-4/FOLFOX-4+P/FOLFOX-4+BV (EPP*: N = 937; ITT** [†] : N = 1017)	
Population	Median Time to Event (Days)		HR (97.5% CI)
Parameter: Progression-free Survival			
EPP	241	259	1.05 (0.94; 1.18)
ITT	244	259	1.04 (0.93; 1.16)
Parameter: Overall Survival			
EPP	577	549	0.97 (0.84; 1.14)
ITT	581	553	0.96 (0.83; 1.12)
ADDITIONAL 1 YEAR OF FOLLOW UP			
Population	Median Time to Event (Days)		HR (97.5% CI)
Parameter: Progression-free Survival			
EPP	242	259	1.02 (0.92; 1.14)
ITT	244	259	1.01 (0.91; 1.12)

Parameter: Overall Survival			
EPP	600	594	1.00 (0.88; 1.13)
ITT	602	596	0.99 (0.88; 1.12)

[†]EPP=eligible patient population; [‡]ITT=intent-to-treat population.

In a randomised, controlled phase III study (CAIRO), the effect of using capecitabine at a starting dose of 1000 mg/m² for 2 weeks every 3 weeks in combination with irinotecan for the first-line treatment of patients with metastatic colorectal cancer was studied. 820 Patients were randomized to receive either sequential treatment (n=410) or combination treatment (n=410). Sequential treatment consisted of first-line capecitabine (1250 mg/m² twice daily for 14 days), second-line irinotecan (350 mg/m² on day 1), and third-line combination of capecitabine (1000 mg/m² twice daily for 14 days) with oxaliplatin (130 mg/m² on day 1). Combination treatment) consisted of first-line capecitabine (1000 mg/m² twice daily for 14 days) combined with irinotecan (250 mg/m² on day 1) (XELIRI) and second-line capecitabine (1000 mg/m² twice daily for 14 days) plus oxaliplatin (130 mg/m² on day 1). All treatment cycles were administered at intervals of 3 weeks. In first-line treatment the median progression-free survival in the intent-to-treat population was 5.8 months (95%CI 5.1 - 6.2 months) for capecitabine monotherapy and 7.8 months (95%CI 7.0 - 8.3 months; p=0.0002) for XELIRI. However this was associated with an increased incidence of gastrointestinal toxicity and neutropenia during first-line treatment with XELIRI (26% and 11% for XELIRI and first line capecitabine respectively).

The XELIRI has been compared with 5-FU + irinotecan (FOLFIRI) in three randomised studies in patients with metastatic colorectal cancer. The XELIRI regimens included capecitabine 1000 mg/m² twice daily on days 1 to 14 of a three-week-cycle combined with irinotecan 250 mg/m² on day1. In the largest study (BICC-C), patients were randomised to receive either open label FOLFIRI (n=144), bolus 5-FU (mFL) (n=145) or XELIRI (n=141) and were additionally randomised to receive either double-blind treatment with celecoxib or placebo. Median PFS was 7.6 months for FOLFIRI, 5.9 months for mFL (p=0.004) for the comparison with FOLFIRI, and 5.8 months for XELIRI (p=0.015). Median OS was 23.1 months for FOLFIRI, 17.6 months for mFL (p=0.09), and 18.9 months for XELIRI (p=0.27). Patients treated with XELIRI experienced excessive gastrointestinal toxicity compared with FOLFIRI (diarrhoea 48% and 14% for XELIRI and FOLFIRI respectively).

In the EORTC study patients were randomised to receive either open label FOLFIRI (n=41) or XELIRI (n=44) with additional randomisation to either double-blind treatment with celecoxib or placebo. Median PFS and overall survival (OS) times were shorter for XELIRI versus FOLFIRI (PFS 5.9 versus 9.6 months and OS 14.8 versus 19.9 months), in addition to which excessive rates of diarrhoea were reported in patients receiving the XELIRI regimen (41% XELIRI, 5.1% FOLFIRI).

In the study published by Skof et al, patients were randomised to receive either FOLFIRI or XELIRI . Overall response rate was 49% in the XELIRI and 48% in the FOLFIRI arm (p=0.76). At the end of treatment, 37% of patients in the XELIRI and 26% of patients in the FOLFIRI arm were without evidence of the disease (p=0.56). Toxicity was similar between treatments with the exception of neutropenia reported more commonly in patients treated with FOLFIRI.

Montagnani et al used the results from the above three studies to provide an overall analysis of randomised studies comparing FOLFIRI and XELIRI treatment regimens in the treatment of mCRC. A significant reduction in the risk of progression was associated with FOLFIRI (HR, 0.76; 95%CI, 0.62-0.95; P<0.01), a result partly due to poor tolerance to the XELIRI regimens used.

Data from a randomised clinical study (Sougkekos et al, 2012) comparing FOLFIRI + bevacizumab with XELIRI + bevacizumab showed no significant differences in PFS or OS between treatments. Patients were randomised to receive either FOLFIRI plus bevacizumab (Arm-A, n=167) or XELIRI plus bevacizumab (Arm-B, n=168). For Arm B, the XELIRI regimen used capecitabine 1000 mg/m² twice daily for 14 days +irinotecan 250 mg/m² on day 1. Median progression-free survival (PFS) was 10.0 and 8.9 months; p=0.64, overall survival 25.7 and 27.5 months; p=0.55 and response rates 45.5 and 39.8%; p=0.32 for FOLFIRI-Bev and XELIRI-Bev, respectively. Patients treated with XELIRI + bevacizumab reported a significantly higher incidence of diarrhoea, febrile neutropenia and hand-foot skin reactions than patients treated with FOLFIRI + bevacizumab with significantly increased treatment delays, dose reductions and treatment discontinuations.

Data from a multicentre, randomised, controlled phase II study (AIO KRK 0604) supports the use of capecitabine at a starting dose of 800 mg/m² for 2 weeks every 3 weeks in combination with irinotecan and bevacizumab for the first-line treatment of patients with metastatic colorectal cancer. 120 Patients were randomised to a modified XELIRI regimen with capecitabine 800 mg/m² twice daily for two weeks followed by a 7-day rest period), irinotecan (200 mg/m² as a 30 minute infusion on day 1 every 3 weeks), and bevacizumab (7.5 mg/kg as a 30 to 90 minute infusion on day 1 every 3 weeks)[†]; 127 patients were randomised to treatment with capecitabine (1000 mg/m² twice daily for two weeks followed by a 7-day rest period), oxaliplatin (130 mg/m² as a 2 hour infusion on day 1 every 3 weeks), and bevacizumab (7.5 mg/kg as a 30 to 90 minute infusion on day 1 every 3 weeks). Following a mean duration of follow-up for the study population of 26.2 months, treatment responses were as shown below:

Table 3 Key efficacy results for AIO KRK study

	XELOX + bevacizumab (ITT: N=127)	Modified XELIRI+ bevacizumab (ITT: N= 120)	Hazard ratio 95% CI P value
Progression-free survival after 6 months			
ITT	76%	84%	-
95% CI	69 - 84%	77 - 90%	
Median progression free survival			
ITT	10.4 months	12.1 months	0.93
95% CI	9.0 - 12.0	10.8 - 13.2	0.82 - 1.07 P=0.30
Median overall survival			
ITT	24.4 months	25.5 months	0.90
95% CI	19.3 - 30.7	21.0 - 31.0	0.68 - 1.19 P=0.45

Combination therapy in second-line treatment of metastatic colorectal cancer

Data from a multicentre, randomised, controlled phase III clinical study (NO16967) support the use of capecitabine in combination with oxaliplatin for the second-line treatment of metastatic colorectal cancer. In this trial, 627 patients with metastatic colorectal carcinoma who have received prior treatment with irinotecan in combination with a fluoropyrimidine regimen as first line therapy were randomised to treatment with XELOX or FOLFOX-4. For the dosing schedule of XELOX and FOLFOX-4 (without addition of placebo or bevacizumab), refer to table 4. XELOX was demonstrated to be non-inferior to FOLFOX-4 in terms of progression-free survival in the per-protocol population and intent-to-treat population (see table 4). The results indicate that XELOX is equivalent to FOLFOX-4 in terms of overall survival (see table 4). The median follow up at the time of the primary analyses in the intent-to-treat population was 2.1 years; data from analyses following an additional 6 months of follow up are also included in table 4.

Table 4 Key efficacy results for the non-inferiority analysis of Study NO16967

PRIMARY ANALYSIS			
XELOX (PPP*: N=251; ITT** [†] : N=313)		FOLFOX-4 (PPP*: N = 252; ITT** [†] : N= 314)	
Population	Median Time to Event (Days)		HR (95% CI)
Parameter: Progression-free Survival			
PPP	154	168	1.03 (0.87; 1.24)
ITT	144	146	0.97 (0.83; 1.14)
Parameter: Overall Survival			
PPP	388	401	1.07 (0.88; 1.31)
ITT	363	382	1.03 (0.87; 1.23)
ADDITIONAL 6 MONTHS OF FOLLOW UP			
Population	Median Time to Event (Days)		HR (95% CI)
Parameter: Progression-free Survival			

Parameter: Overall Survival			
PPP	393	402	1.05 (0.88; 1.27)
ITT	363	382	1.02 (0.86; 1.21)
PPP	154	166	1.04 (0.87; 1.24)
ITT	143	146	0.97 (0.83; 1.14)

[†]PPP=per-protocol population; [‡]ITT=intent-to-treat population

Advanced gastric cancer

Data from a multicentre, randomised, controlled phase III clinical trial in patients with advanced gastric cancer supports the use of capecitabine for the first-line treatment of advanced gastric cancer (ML17032). In this trial, 160 patients were randomised to treatment with capecitabine (1000 mg/m² twice daily for 2 weeks followed by a 7-day rest period) and cisplatin (80 mg/m² as a 2-hour infusion every 3 weeks). A total of 156 patients were randomised to treatment with 5-FU (800 mg/m² per day, continuous infusion on days 1 to 5 every 3 weeks) and cisplatin (80 mg/m² as a 2-hour infusion on day 1, every 3 weeks). Capecitabine in combination with cisplatin was non-inferior to 5-FU in combination with cisplatin in terms of progression-free survival in the per protocol analysis (hazard ratio 0.81; 95% CI 0.63 - 1.04). The median progression-free survival was 5.6 months (capecitabine + cisplatin) versus 5.0 months (5-FU + cisplatin). The hazard ratio for duration of survival (overall survival) was similar to the hazard ratio for progression-free survival (hazard ratio 0.85; 95% CI 0.64 - 1.13). The median duration of survival was 10.5 months (capecitabine + cisplatin) versus 9.3 months (5-FU + cisplatin).

Data from a randomised multicentre, phase III study comparing capecitabine to 5-FU and oxaliplatin to cisplatin in patients with advanced gastric cancer supports the use of capecitabine for the first-line treatment of advanced gastric cancer (REAL-2). In this trial, 1002 patients were randomised in a 2x2 factorial design to one of the following 4 arms:

- ECF: epirubicin (50 mg/ m² as a bolus on day 1 every 3 weeks), cisplatin (60 mg/m² as a two hour infusion on day 1 every 3 weeks) and 5-FU (200 mg/m² daily given by continuous infusion via a central line).
- ECX: epirubicin (50 mg/m² as a bolus on day 1 every 3 weeks), cisplatin (60 mg/m² as a two hour infusion on day 1 every 3 weeks), and capecitabine (625 mg/m² twice daily continuously).
- EOF: epirubicin (50 mg/m² as a bolus on day 1 every 3 weeks), oxaliplatin (130 mg/m² given as a 2 hour infusion on day 1 every 3 weeks), and 5-FU (200 mg/m² daily given by continuous infusion via a central line).

- EOX: epirubicin (50 mg/m² as a bolus on day 1 every 3 weeks), oxaliplatin (130 mg/m² given as a 2 hour infusion on day 1 every 3 weeks), and capecitabine (625 mg/m² twice daily continuously).

The primary efficacy analyses in the per protocol population demonstrated non-inferiority in overall survival for capecitabine- vs 5-FU-based regimens (hazard ratio 0.86; 95% CI 0.8 - 0.99) and for oxaliplatin- vs cisplatin-based regimens (hazard ratio 0.92; 95% CI 0.80 - 1.1). The median overall survival was 10.9 months in capecitabine-based regimens and 9.6 months in 5-FU based regimens. The median overall survival was 10.0 months in cisplatin-based regimens and 10.4 months in oxaliplatin-based regimens.

Capecitabine has also been used in combination with oxalplatin for the treatment of advanced gastric cancer. Studies with capecitabine monotherapy indicate that capecitabine has activity in advanced gastric cancer.

Colon, colorectal and advanced gastric cancer: meta-analysis

A meta-analysis of six clinical trials (studies SO14695, SO14796, M66001, NO16966, M016967, M17032) supports capecitabine replacing 5-FU in mono- and combination treatment in gastrointestinal cancer. The pooled analysis includes 3097 patients treated with capecitabine-containing regimens and 3074 patients treated with 5-FU-containing regimens. Median overall survival time was 703 days (95% CI: 671; 745) in patients treated with capecitabine-containing regimens and 683 days (95% CI: 646; 715) in patients treated with 5-FU-containing regimens. The hazard ratio for overall survival was 0.94 (95% CI: 0.89; 1.00, p=0.0489) indicating that capecitabine-containing regimens are non-inferior to 5-FU-containing regimens.

Breast cancer

Combination therapy with capecitabine and docetaxel in locally advanced or metastatic breast cancer

Data from one multicentre, randomised, controlled phase III clinical trial support the use of capecitabine in combination with docetaxel for treatment of patients with locally advanced or metastatic breast cancer after failure of cytotoxic chemotherapy, including an anthracycline. In this trial, 255 patients were randomised to treatment with capecitabine (1250 mg/m² twice daily for 2 weeks followed by 1-week rest period and docetaxel 75 mg/m² as a 1 hour intravenous infusion every 3 weeks). 256 patients were randomised to treatment with docetaxel alone (100 mg/m² as a 1 hour intravenous infusion every 3 weeks). Survival was superior in the capecitabine + docetaxel combination arm (p=0.0126). Median survival was 442 days (capecitabine + docetaxel) vs. 352 days (docetaxel alone). The overall objective response rates in the all-randomised population (investigator assessment) were 41.6% (capecitabine + docetaxel) vs. 29.7% (docetaxel alone), p = 0.0058. Time to progressive disease was superior in the capecitabine + docetaxel combination arm (p<0.0001). The median time to progression was 186 days (capecitabine + docetaxel) vs. 128 days (docetaxel alone).

Monotherapy with capecitabine after failure of taxanes, anthracycline containing chemotherapy, and for whom anthracycline therapy is not indicated

Data from two multicentre phase II clinical trials support the use of capecitabine monotherapy for treatment of patients after failure of taxanes and an anthracycline-containing chemotherapy regimen or for whom further anthracycline therapy is not indicated. In these trials, a total of 236 patients were treated with capecitabine (1250 mg/m² twice daily for 2 weeks followed by 1-week rest period). The overall objective response rates (investigator assessment) were 20% (first trial) and 25% (second trial). The median time to progression was 93 and 98 days. Median survival was 384 and 373 days.

All indications

A meta-analysis of 14 clinical trials with data from over 4700 patients treated with capecitabine monotherapy or capecitabine in combination with different chemotherapy regimens in multiple indications (colon, colorectal, gastric and breast cancer) showed that capecitabine monotherapy or capecitabine in combination with different chemotherapy regimens (capecitabine plus anthracycline combination, Premedication with antiemetic and antiemetics according to the oxaliplatin summary of product characteristics is recommended for patients receiving the capecitabine plus oxaliplatin combination. Adjuvant treatment of patients with stage III colon cancer is recommended for a duration of 6 months.

Pharmacokinetics

The pharmacokinetics of capecitabine have been evaluated over a dose range of 502-3514 mg/m²/day. The parameters of capecitabine, 5'-deoxy-5-fluorouridine (5'-DFCR) and 5'-deoxy-5-fluorouridine (5'-DFUR) measured on days 1 and 14 were similar. The AUC of 5-FU was 30%-35% higher on day 14. Capecitabine dose reduction decreases systemic exposure to 5-FU more than dose-proportionally, due to non-linear pharmacokinetics for the active metabolite.

Absorption

After oral administration, capecitabine is rapidly and extensively absorbed, followed by extensive conversion to the metabolites, 5'-DFCR and 5'-DFUR. Administration with food decreases the rate of capecitabine absorption, but only results in a minor effect on the AUC of 5'-DFUR, and on the AUC of the subsequent metabolite 5-FU. At the dose of 1250 mg/m² on day 14 with administration after food intake, the peak plasma concentrations (C_{max} in µg/ml) for capecitabine, 5'-DFCR, 5'-DFUR, 5-FU and FBAL were 4.67, 3.05, 12.1, 0.95 and 5.46 respectively. The time to peak plasma concentrations (T_{max} in hours) were 1.50, 2.00, 2.00, 2.00 and 3.34. The AUC_{0-∞} values in µg·h/ml were 7.75, 7.24, 24.6, 2.03 and 36.3.

Distribution

In vitro human plasma studies have determined that capecitabine, 5'-DFCR, 5'-DFUR and 5-FU are 54%, 10%, 62% and 10% protein bound, mainly to albumin.

Biotransformation

Capecitabine is first metabolised by hepatic carboxylesterase to 5'-DFCR, which is then converted to 5'-DFUR by cytidine deaminase, principally located in the liver and tumour tissues. Further catalytic activation of 5'-DFUR then occurs by thymidine phosphorylase (ThyPase). The enzymes involved in the catalytic activation are found in tumour tissues but also in normal tissues, albeit usually at lower levels. The sequential enzymatic biotransformation of capecitabine to 5-FU leads to higher concentrations within tumour tissues. In the case of colorectal tumours, 5-FU generation appears to be in large part localised in tumour stromal cells. Following oral administration of capecitabine to patients with

Use of this medicine is applicable to all indications and to all special populations.

Dose modifications for toxicity when capecitabine is used continuously in combination with other medicinal products

Dose modifications for toxicity when capecitabine is used continuously in combination with other medicinal products should be made according to table 7 above for capecitabine and according to the appropriate summary of product characteristics for the other medicinal product(s).

Posology adjustments for special populations:

Hepatic impairment

Insufficient safety and efficacy data are available in patients with hepatic impairment to provide a dose adjustment recommendation. No information is available on hepatic impairment due to cirrhosis or hepatitis.

Renal impairment

Capecitabine is contraindicated in patients with severe renal impairment (creatinine clearance below 30 ml/min [Cockcroft and Gault] at baseline). The incidence of grade 3 or 4 adverse reactions in patients with moderate renal impairment (creatinine clearance 30-50 ml/min at baseline) is increased compared to the overall population. In patients with moderate renal impairment at baseline, a dose reduction to 75% for a starting dose of 1250 mg/m² is recommended. In patients with moderate renal impairment at baseline, no dose reduction is required for a starting dose of 1000 mg/m². In patients with mild renal impairment (creatinine clearance 51-80 ml/min at baseline) no adjustment of the starting dose is recommended. Careful monitoring and prompt treatment interruption is recommended if the patient develops a grade 2, 3 or 4 adverse event during treatment and subsequent dose adjustment as outlined in table 7 above. If the calculated creatinine clearance decreases during treatment to a value below 30 ml/min, capecitabine should be discontinued. These dose adjustment recommendations for renal impairment apply both to monotherapy and combination use (see also section "Elderly" below).

Elderly

During capecitabine monotherapy, no adjustment of the starting dose is needed. However, grade 3 or 4 treatment-related adverse reactions were more frequent in patients ≥60 years of age compared to younger patients.

When capecitabine was used in combination with other medicinal products, elderly patients (≥65 years) experienced more grade 3 and grade 4 adverse drug reactions, including those leading to discontinuation, compared to younger patients. Careful monitoring of patients ≥60 years of age is advisable.

- *In combination with docetaxel*: an increased incidence of grade 3 or 4 treatment-related adverse reactions and treatment-related adverse reactions were observed in patients 60 years of age or more (see *Pharmacodynamics*). For patients 60 years of age or more, a starting dose reduction of capecitabine to 75% (950 mg/m² twice daily) is recommended. If no toxicity is observed in patients ≥60 years of age treated with a reduced capecitabine starting dose in combination with docetaxel, the dose of capecitabine may be cautiously escalated to 1250 mg/m² twice daily.

Paediatric population

There is no relevant use of capecitabine in the paediatric population in the indications colon, colorectal, gastric and breast cancer.

Method of administration

Capecitabine tablets should be swallowed with water within 30 minutes after a meal.

Contraindications

- History of severe and unexpected reactions to fluoropyrimidine therapy,
- Hypersensitivity to capecitabine or to any of the excipients of Capecitabine Tablets or fluorouracil,
- In patients with known complete absence of dihydropyrimidine dehydrogenase (DPD) activity (see *Warnings and Precautions*),
- During pregnancy and lactation,
- In patients with severe leukopenia, neutropenia, or thrombocytopenia,
- In patients with severe hepatic impairment,
- In patients with severe renal impairment (creatinine clearance below 30 ml/min),
- Treatment with sorivudine or its chemically related analogues, such as brivudine (see *Drug Interactions*),
- If contraindications exist to any of the medicinal products in the combination regimen, that medicinal product should not be used.

Warnings and Precautions

Dose limiting toxicities

Dose limiting toxicities include diarrhoea, abdominal pain, nausea, stomatitis and hand-foot syndrome (hand-foot skin reaction, palmar-plantar erythrodysesthesia). Most adverse reactions are reversible and do not require permanent discontinuation of therapy, although doses may need to be withheld or reduced.

Diarrhoea

Patients with severe diarrhoea should be carefully monitored and given fluid and electrolyte replacement if they become dehydrated. Standard antidiarrhoeal treatments (e.g. loperamide) may be used. NCI-C CTC grade 2 diarrhoea is defined as an increase of 4 to 6 stools/day or nocturnal stools, grade 3 diarrhoea as an increase of 7 to 9 stools/day or incontinence and malabsorption. Grade 4 diarrhoea is an increase of ≥10 stools/day or grossly bloody diarrhoea or the need for parenteral support. Dose reduction should be applied as necessary (see section 4.2).

Dehydration

Dehydration should be prevented or corrected at the onset. Patients with anorexia, asthenia, nausea, vomiting or diarrhoea may rapidly become dehydrated. Dehydration may cause acute renal failure, especially in patients with pre-existing compromised renal function or when capecitabine is given concomitantly with known nephrotoxicmedicinal products. Acute renal failure secondary to dehydration might be potentially fatal. If grade 2 (or higher) dehydration occurs, capecitabine treatment should be immediately interrupted and the dehydration corrected. Treatment should not be restarted until the patient is rehydrated and any precipitating causes have been corrected or controlled. Dose modifications applied should be applied for the precipitating adverse event as necessary (see section 4.2).

Hand-foot syndrome

Hand and foot syndrome also known as hand-foot skin reaction or palmar-plantar erythrodysessthesia or chemotherapy induced acral erythema. Grade 1 hand-foot syndrome is defined as numbness, dysesthesia/paresthesia, tingling, painless swelling or erythema of the hands and/or feet and/or discomfort which does not disrupt the patient's normal activities.

Grade 2 hand-foot syndrome is painful erythema and swelling of the hands and/or feet and/or discomfort affecting the patient's activities of daily living.Grade 3 hand-foot syndrome is moist desquamation, ulceration, blistering and severe pain of the hands and/or feet and/or severe discomfort that causes the patient to be unable to work or perform activities of daily living. Persistent or severe hand-foot syndrome (Grade 2 and above) can eventually lead to loss of fingerprints which could impact patient identification. If grade 2 or 3 hand-foot syndrome occurs, administration of capecitabine should be interrupted until the event resolves or decreases in intensity to grade 1. Following grade 3 hand-foot syndrome, subsequent doses of capecitabine should be decreased. When capecitabine and cisplatin are used in combination, the use of vitamin B6 (pyridoxine) is not advised for symptomatic or secondary prophylactic treatment of hand-foot syndrome, because of published reports that it may decrease the efficacy of cisplatin. There is some evidence that dexpantenol is effective for hand-foot syndrome prophylaxis in patients treated with capecitabine.

Cardiotoxicity

Cardiotoxicity has been associated with fluoropyrimidine therapy, including myocardial infarction, angina, dysrhythmias, cardiogenic shock, sudden death and electrocardiographic changes (including very rare cases of QT prolongation). These adverse reactions may be more common in patients with a prior history of coronary artery disease. Cardiac arrhythmias (including ventricular fibrillation, torsade de pointes, and bradycardia), angina pectoris, myocardial infarction, heart failure and cardiomyopathy have been reported in patients receiving capecitabine. Caution must be exercised in patients with history of significant cardiac disease, arrhythmias and angina pectoris (see section 4.8).

Hypo- or hypercalcaemia

Hypo- or hypercalcaemia has been reported during capecitabine treatment. Caution must be exercised in patients with pre-existing hypo- or hypercalcaemia (see section 4.8).

Central or peripheral nervous system disease

Caution must be exercised in patients with central or peripheral nervous system disease, e.g. brain metastasis or neuropathy (see section 4.8).

Diabetes mellitus or electrolyte disturbances

Caution must be exercised in patients with diabetes mellitus or electrolyte disturbances, as these may be aggravated during capecitabine treatment.

Coumarin-derivative anticoagulation

In a interaction study with single-dose warfarin administration, there was a significant increase in the mean AUC (+57%) of S-warfarin. These results suggest an interaction, probably due to an inhibition of the cytochrome P450 2C9 isoenzyme system by capecitabine. Patients receiving concomitant capecitabine and oral coumarin-derivative anticoagulant therapy should have their anticoagulant response (INR or prothrombin time) monitored closely and the anticoagulant dose adjusted accordingly (see section 4.5).

Hepatic impairment

In the absence of safety and efficacy data in patients with hepatic impairment, Capecitabine use should be carefully monitored in patients with mild to moderate liver dysfunction, regardless of the presence or absence of liver metastasis. Administration of capecitabine should be interrupted if treatment-related elevations in bilirubin of >3.0 x ULN or treatment-related elevations in hepatic aminotransferases (ALT, AST) of >2.5 x ULN occur. Treatment with capecitabine monotherapy may be resumed when bilirubin decreases to ≤3.0 x ULN or hepatic aminotransferases decrease to ≤ 2.5 x ULN.

Renal impairment

The incidence of grade 3 or 4 adverse reactions in patients with moderate renal impairment (creatinine clearance 30-50 ml/min) is increased compared to the overall population (see sections 4.2 and 4.3).

Dihydropyrimidine dehydrogenase (DPD) deficiency

Rarely, unexpected, severe toxicity (e.g. stomatitis, diarrhoea, mucosal inflammation, neutropenia and neurotoxicity) associated with 5-FU has been attributed to a deficiency of DPD activity. Patients with low or absent DPD activity, an enzyme involved in fluorouracil degradation, are at increased risk for severe, life-threatening, or fatal adverse reactions caused by fluorouracil. Although DPD deficiency cannot be precisely defined, it is known that patients with certain homozygous or certain compound heterozygous mutations in the *DPYD* gene locus, which can cause complete or near complete absence of DPD enzymatic activity (as determined from laboratory assays), have the highest risk of life-threatening or fatal toxicity and should not be treated with capecitabine (see section 4.3). No dose has been proven safe for patients with complete absence of DPD activity.

For patients with partial DPD deficiency (such as those with heterozygous mutations in the *DPYD* gene) and where the benefits of capecitabine are considered to outweigh the risks (taking into account the suitability of an alternative non-fluoropyrimidine chemotherapeutic regimen), these patients must be treated with extreme caution and frequent monitoring with DCR adjustment according to toxicity. There is insufficient data to recommend a specific dose in patients with partial DPD activity as measured by specific test.

In patients with unrecognized DPD deficiency treated with capecitabine, life-threatening toxicities manifesting as acute overdose may occur (see section 4.9). In the event of grade 2-4 acute toxicity, treatment must be discontinued immediately. Permanent discontinuation should be considered based on clinical assessment of the onset, duration and severity of the observed toxicities.

Ophthalmologic complications

Patients should be carefully monitored for ophthalmological complications such as keratitis and corneal disorders, especially if they have a prior history of eye disorders. Treatment of eye disorders should be initiated as clinically appropriate.

Severe skin reactions

Capecitabine can induce severe skin reactions such as Stevens-Johnson syndrome and Toxic Epidermal Necrolysis. Capecitabine should be permanently discontinued in patients who experience a severe skin reaction during treatment.

Excipient

Capacer – 500 contains lactose as an excipient, patients with rare hereditary problems of galactose intolerance, the Lapp lactase deficiency or glucose-galactose malabsorption should not take this medicine.

Drug Interactions

Interaction studies have only been performed in adults.

Interaction with other medicinal products

Cytochrome P-450 2C9 substrates: Other than warfarin, no formal drug-drug interaction studies between capecitabine and other CYP2C9 substrates have been conducted. Care should be exercised when capecitabine is co-administered with 2C9 substrates (e.g., phenytoin). See also interaction with coumarin-derivative anticoagulants below, and *Warnings and Precautions*.

Coumarin-derivative anticoagulants: altered coagulation parameters and/or bleeding have been reported in patients taking capecitabine concomitantly with coumarin-derivative anticoagulants such as warfarin and phenprocoumon. These reactions occurred within several days and up to several months after initiating capecitabine therapy and, in a few cases, within one month after stopping capecitabine. In a clinical pharmacokinetic interaction study, after a single 20 mg dose of warfarin, capecitabine treatment increased the AUC of S-warfarin by 57% with a 91% increase in INR value. Since metabolism of R-warfarin was not affected, these results indicate that capecitabine down-regulates isozyme 2C9, but has no effect on isozymes 1A2 and 3A4. Patients taking coumarin-derivative anticoagulants concomitantly with capecitabine should be monitored regularly for alterations in their coagulation parameters (PT or INR) and the anticoagulant dose adjusted accordingly.

Phenytoin: increased phenytoin plasma concentrations resulting in symptoms of phenytoin intoxication in single cases have been reported during concomitant use of capecitabine with phenytoin. Patients taking phenytoin concomitantly with capecitabine should be regularly monitored for increased phenytoin plasma concentrations.

Folinic acid/folic acid: a combination study with capecitabine and folinic acid indicated that folinic acid has no major effect on the pharmacokinetics of capecitabine and its metabolites. However, folinic acid has an effect on the pharmacodynamics of capecitabine and its toxicity may be enhanced by folinic acid: the maximum tolerated dose (MTD) of capecitabine alone using the intermittent regimen is 3000 mg/m² per day whereas it is only 2000 mg/m² per day when capecitabine was combined with folinic acid (30 mg orally bid). The enhanced toxicity may be relevant when switching from 5-FU/LV to a capecitabine regimen. This may also be relevant with folic acid supplementation for folate deficiency due to the similarity between folinic acid and folic acid.

Sorivudine and analogues: a clinically significant drug-drug interaction between sorivudine and 5-FU, resulting from the inhibition of dihydropyrimidine dehydrogenase by sorivudine, has been described. This interaction, which leads to increased fluoropyrimidine toxicity, is potentially fatal. Therefore, capecitabine must not be administered concomitantly with sorivudine or its chemically related analogues, such as brivudine (see *Contraindications*). There must be at least a 4-week waiting period between end of treatment with sorivudine or its chemically related analogues such as brivudine and start of capecitabine therapy.

Antacid: the effect of an aluminum hydroxide and magnesium hydroxide-containing antacid on the pharmacokinetics of capecitabine was investigated. There was a small increase in plasma concentrations of capecitabine and one metabolite (5-DFCR); there was no effect on the 3 major metabolites (5-DFUR, 5-FU and FBAL).

Allopurinol: interactions with allopurinol have been observed for 5-FU; with possible decreased efficacy of 5-FU. Concomitant use of allopurinol with capecitabine should be avoided.

Interferon alpha: the MTD of capecitabine was 2000 mg/m² per day when combined with interferon alpha-2a (3 MIU/m² per day) compared to 3000 mg/m² per day when capecitabine was used alone.

Radiotherapy: the MTD of capecitabine alone using the intermittent regimen is 3000 mg/m² per day, whereas, when combined with radiotherapy for rectal cancer, the MTD of capecitabine is 2000 mg/m² per day using either a continuous schedule or given daily Monday through Friday during a 6-week course of radiotherapy.

Oxaliplatin: no clinically significant differences in exposure to capecitabine or its metabolites, free platinum or total platinum occurred when capecitabine was administered in combination with oxaliplatin or in combination with oxaliplatin and bevacizumab.

Bevacizumab: there was no clinically significant effect of bevacizumab on the pharmacokinetic parameters of capecitabine or its metabolites in the presence of oxaliplatin.

Food interaction

In all clinical trials, patients were instructed to administer capecitabine within 30 minutes after a meal. Since current safety and efficacy data are based upon administration with food, it is recommended that capecitabine be administered with food. Administration with food decreases the rate of capecitabine absorption (see *Pharmacokinetics*).

Pregnancy and Lactation

Women of childbearing potential/Contraception in males and females

Women of childbearing potential should be advised to avoid becoming pregnant while receiving treatment with capecitabine. If the patient becomes pregnant while receiving capecitabine, the potential hazard to the foetus must be explained. An effective method of contraception should be used during treatment.

Pregnancy

There are no studies in pregnant women using capecitabine; however, it should be assumed that capecitabine may cause foetal harm if administered to pregnant women. In reproductive toxicity studies in animals, capecitabine administration caused embryo lethality and teratogenicity. These findings are expected effects of fluoropyrimidine derivatives. Capecitabine is contraindicated during pregnancy.

Lactation

It is not known whether capecitabine is excreted in human breast milk. In lactating mice, considerable amounts of capecitabine and its metabolites were found in milk. Breast-feeding should be discontinued while receiving treatment with capecitabine.

Fertility

There is no data on capecitabine and impact on fertility. The capecitabine pivotal studies included females of childbearing potential and males only if they agreed to use an acceptable method of birth control to avoid pregnancy for the duration of the study and for a reasonable period thereafter.

In animal studies effects on fertility were observed.

Undesirable Effects

Summary of the safety profile

The overall safety profile of capecitabine is based on data from over 3000 patients treated with capecitabine as monotherapy or capecitabine in combination with different chemotherapy regimens in multiple indications. The safety profiles of capecitabine monotherapy for the metastatic breast cancer, metastatic colorectal cancer and adjuvant colon cancer populations are comparable. See *Pharmacodynamics* for details of major studies, including study designs and major efficacy results.

The most commonly reported and/or clinically relevant treatment-related adverse drug reactions (ADRs) were gastrointestinal disorders (especially diarrhoea, nausea, vomiting, abdominal pain, stomatitis), hand-foot syndrome (palmar-plantar erythrodysesthesia), fatigue, asthenia, anorexia, cardiotoxicity, increased renal dysfunction on those with preexisting compromised renal function, and thrombosis/embolism.

Tabulated summary of adverse reactions

ADRs considered by the investigator to be possibly, probably, or remotely related to the administrati of table

n of capecitabine are listed in table 8 for capecitabine given as monotherapy and in table 9 for capecitabine given in combination with different chemotherapy regimens in multiple indications. The following headings are used to rank the ADRs by frequency: very common (≥ 1/10), common (≥ 1/100to < 1/10), uncommon (≥ 1/1,000to < 1/100), rare (≥1/10,000 to <1/1,000), very rare (<1/10,000). Within each frequency grouping, ADRs are presented in order of decreasing seriousness.

Capecitabine Monotherapy:

Table 8 lists ADRs associated with the use of capecitabine monotherapy based on a pooled analysis of safety data from three major studies including over 1900 patients (studies M66001, SO14695, and SO14796). ADRs are added to the appropriate frequency grouping according to the overall incidence from the pooled analysis.

Table 8 Summary of related ADRs reported in patients treated with capecitabine monotherapy

Body System	Very Common <i>All grades</i>	Common <i>All grades</i>	Uncommon <i>Severe and/or Life-threatening (grade 3-4) or considered medically relevant</i>	Rare/Very Rare (Post-Marketing Experience)
<i>Infections and infestations</i>	-	Herpes viral infection, Nasopharyngitis, Lower respiratory tract infection	Sepsis, Urinary tract infection, Cellulitis, Tonsillitis, Pharyngitis, Oral candidiasis, Influenza, Gastroenteritis, Fungal infection, Infection, Tooth abscess	
<i>Neoplasm benign, malignant and unspecified</i>	-	-	Lipoma	

<i>Blood and lymphatic system disorders</i>	-	-	Neutropenia, Anaemia,	Febrile neutropenia, Pancytopenia, Granulocytopenia, Thrombocytopenia, Leukopenia, Haemolytic anaemia, International Normalised Ratio (INR) increased/Prothrombin time prolonged	
<i>Immune system disorders</i>	-	-	Hypersensitivity		
<i>Metabolism and nutrition disorders</i>	Anorexia	Dehydration, , Weight decreased	Diabetes, Hypokalaemia, Appetite disorder, Malnutrition, Hypertriglyceridaemia,		
<i>Psychiatric disorders</i>	-	Insomnia, Depression	Confusional state, Panic attack, Depressed mood, Libido decreased		
<i>Nervous system disorders</i>	-	Headache, Lethargy, Dizziness, Parasthesia, Dysgeusia	Aphasia, Memory impairment, Ataxia, Syncope, Balance disorder, Sensory disorder, Neuropathy peripheral	Toxic leukoencephalopathy (very rare)	
<i>Eye disorders</i>	-	Lacrimation increased, Conjunctivitis, Eye irritation	Visual acuity reduced, Diplopia	Lacrimal duct stenosis (rare), Corneal disorders(rare), keratitis (rare), punctate keratitis (rare)	
<i>Ear and labyrinth disorders</i>	-	-	Vertigo, Ear pain		
<i>Cardiac disorders</i>	-	-	Angina unstable, Angina pectoris, Myocardial ischaemia, Atrial fibrillation, Arrhythmia, Tachycardia, Sinus tachycardia, Palpitations	Ventricular fibrillation (rare), QT prolongation (rare), Torsade de pointes (rare), Bradycardia (rare), Vasospasm (rare)	
<i>Vascular disorders</i>	-	Thrombophlebitis	Deep vein thrombosis, Hypertension, Petechiae, Hypotension, Hot flush, Peripheral coldness		
<i>Respiratory, thoracic and mediastinal disorders</i>	-	Dyspnoea, Epistaxis, Cough, Rhinorrhoea	Pulmonary embolism, Pneumothorax, Haemoptysis, Asthma, Dyspnoea exertional		
<i>Gastrointestinal disorders</i>	Diarrhoea, Vomiting, Nausea, Stomatitis, Abdominal pain	Gastrointestinal haemorrhage, Constipation, Upper abdominal pain, Dyspepsia, Flatulence, Dry mouth	Intestinal obstruction, Ascites, Enteritis, Gastritis, Dysphagia, Abdominal pain lower, Oesophagitis, Abdominal discomfort, Gastroesophageal reflux disease, Colitis, Blood in stool		
<i>Hepatobiliary disorders</i>	-	Hyperbilirubinemia, Liver function test abnormalities	Jaundice	Hepatic failure (rare), Cholestatic hepatitis (rare)	
<i>Skin and subcutaneous tissue disorders</i>	Palmar-plantar erythro-dysaesthesia syndrome	Rash, Alopecia, Erythema, Dry skin, Pruritus, Skin hyper-pigmentation, Rash macular, Skin desquamation, Dermatitis, Pigmentation disorder, Nail disorder	Blister, Skin ulcer, Rash, Urticaria, Photosensitivity reaction, Palmar erythema, Swelling face, Purpura, Radiation recall syndrome	Cutaneous lupus erythematosus (rare), Severe skin reactions such as Stevens-Johnson Syndrome and toxic Epidermal Necrolysis (very rare) (see <i>Warnings and Precautions</i>)	
<i>Muskuloskeletal and connective tissue disorders</i>	-	Pain in extremity, Back pain, Arthralgia	Joint swelling, Bone pain, Facial pain, Musculoskeletal stiffness, Muscular weakness		
<i>Renal and urinary disorders</i>	-	-	Hydronephrosis, Urinary incontinence, Haematuria, Nocturia, Blood creatinine increased		
<i>Reproductive system and breast disorders</i>	-	-	Vaginal haemorrhage		
<i>General disorders and administration site conditions</i>	Fatigue, Asthenia	Pyrexia, Oedema peripheral, Malaise, Chest pain	Oedema, Chills, Influenza like illness, Rigors, Body temperature increased		

Capecitabine in combination therapy:

Table 9 lists ADRs associated with the use of capecitabine in combination with different chemotherapy regimens in multiple indications based on safety data from over 3000 patients. ADRs are added to the appropriate frequency grouping (Very common or Common) according to the highest incidence seen in any of the major clinical trials and are only added when they were seen in **addition** to those seen with capecitabine monotherapy or seen at a **higher frequency grouping** compared to capecitabine monotherapy (see table 8). Uncommon ADRs reported for capecitabine in combination therapy are consistent with the ADRs reported for capecitabine monotherapy or reported for monotherapy with the combination medicinal product (in literature and/or respective summary of product characteristics).

Some of the ADRs are reactions commonly seen with the combination medicinal product (e.g. peripheral sensory neuropathy with docetaxel) or oxaliplatin, hypertension seen with bevacizumab); however an exacerbation by capecitabine therapy can not be excluded.

Table 9 Summary of related ADRs reported in patients treated with capecitabine in combination treatment **in addition** to those seen with capecitabine monotherapy or seen at a **higher frequency grouping** compared to capecitabine monotherapy

Body System	Very common <i>All grades</i>	Common <i>All grades</i>	Rare/Very Rare (Post-Marketing Experience)
<i>Infections and infestations</i>	-	Herpes zoster, Urinary tract infection, Oral candidiasis, Upper respiratory tract infection, Rhinitis, Influenza, 'Infection, Oral herpes	
<i>Blood and lymphatic system disorders</i>	*Neutropenia, *Leucopenia, *Anaemia, *Neutropenic fever, Thrombocytopenia	Bone marrow depression, *Febrile Neutropenia	
<i>Immune system disorders</i>	-	Hypersensitivity	
<i>Metabolism and nutrition disorders</i>	Appetite decreased	Hypokalaemia, Hyponatraemia, Hypomagnesaemia, Hypocalcaemia, Hyperglycaemia	
<i>Psychiatric disorders</i>	-	Sleep disorder, Anxiety	
<i>Nervous system disorders</i>	Paraesthesia, Dysaesthesia, Peripheral neuropathy, Peripheral sensory neuropathy, Dysgeusia, Headache	Neurotoxicity, Tremor, Neuralgia, Hypersensitivity reaction, Hypoaesthesia	
<i>Eye disorders</i>	Lacrimation increased	Visual disorders, Dry eye, Eye pain, Visual impairment, Vision blurred	
<i>Ear and labyrinth disorders</i>	-	Tinnitus, Hypoacusis	
<i>Cardiac disorders</i>	-	Atrial fibrillation, Cardiac ischaemia/infarction	

<i>Vascular disorders</i>	Lower limb oedema, Hypertension, *Embolism and thrombosis	Flushing, Hypotension, Hypertensive crisis, Hot flush, Phlebitis	
<i>Respiratory, thoracic and mediastinal system disorders</i>	Sore throat, Dysaesthesia pharynx	Hiccups, Pharyngolaryngeal pain, Dysphonia	
<i>Gastrointestinal disorders</i>	Constipation, Dyspepsia	Upper gastrointestinal haemorrhage, Mouth ulceration, Gastritis, Abdominal distension, Gastroesophageal reflux disease, Oral pain, Dysphagia, Rectal haemorrhage, Abdominal pain lower, Oral dysaesthesia, Paraesthesia oral, Hypoaesthesia oral, Abdominal discomfort	
<i>Hepatobiliary disorders</i>	-	Hepatic function abnormal	
<i>Skin and subcutaneous tissue disorders</i>	Alopecia, Nail disorder	Hyperhidrosis, Rash erythematous, Urticaria, Night sweats	
<i>Musculoskeletal and connective tissue disorders</i>	Myalgia, Arthralgia, Pain in extremity	Pain in jaw , Muscle spasms, Trismus, Muscular weakness	
<i>Renal and urinary disorder</i>	-	Haematuria, Proteinuria, Creatinine renal clearance decreased, Dysuria	Acute renal failure secondary to dehydration (rare)
<i>General disorders and administration site conditions</i>	Pyrexia, Weakness, *Lethargy, Temperature intolerance	Mucosal inflammation, Pain in limb, Pain, Chills, Chest pain, Influenza-like illness, *Fever, Infusion related reaction, Injection site reaction, Infusion site pain, Injection site pain	
<i>Injury, poisoning and procedural complications</i>	-	Contusion	

* For each term, the frequency count was based on ADRs of all grades. For terms marked with a "+", the frequency count was based on grade 3-4 ADRs. ADRs are added according to the highest incidence seen in any of the major combination trials.

Description of selected adverse reactions

Hand-foot syndrome (see Warnings and Precautions):

For the capecitabine dose of 1250 mg/m² twice daily on days 1 to 14 every 3 weeks, a frequency of 53% to 60% of all-grades HFS was observed in capecitabine monotherapy trials (comprising studies in adjuvant therapy in colon cancer, treatment of metastatic colorectal cancer, and treatment of breast cancer) and a frequency of 63% was observed in the capecitabine/docetaxel arm for the treatment of metastatic breast cancer. For the capecitabine dose of 1000 mg/m² twice daily on days 1 to 14 every 3 weeks, a frequency of 22% to 30% of all-grade HFS was observed in capecitabine combination therapy.

A meta-analysis of 14 clinical trials with data from over 4700 patients treated with capecitabine monotherapy or capecitabine in combination with different chemotherapy regimens in multiple indications (colon, colorectal, gastric and breast cancer) showed that HFS (all grades) occurred in 2066 (43%) patients after a median time of 239 [95% CI 201, 288] days after starting treatment with capecitabine. In all studies combined, the following covariates were statistically significantly associated with an increased risk of developing HFS: increasing capecitabine starting dose (gram), decreasing cumulative capecitabine dose (0.1*kg), increasing relative dose intensity in the first six weeks, increasing duration of study treatment (weeks), increasing age (by 10 year increments), female gender, and good ECOG performance status at baseline (0 versus ≥1).

Diarrhoea (see Warnings and Precautions):

Capecitabine can induce the occurrence of diarrhoea, which has been observed in up to 50% of patients.

The results of a meta-analysis of 14 clinical trials with data from over 4700 patients treated with capecitabine showed that in all studies combined, the following covariates were statistically significantly associated with an increased risk of developing diarrhoea: increasing capecitabine starting dose (gram), increasing duration of study treatment (weeks), increasing age (by 10 year increments), and female gender. The following covariates were statistically significantly associated with a decreased risk of developing diarrhoea: increasing cumulative capecitabine dose (0.1*kg) and increasing relative dose intensity in the first six weeks.

Cardiotoxicity (see Warnings and Precautions):

In addition to the ADRs described in tables 8 and 9, the following ADRs with an incidence of less than 0.1% were associated with the use of capecitabine monotherapy based on a pooled analysis from clinical safety data from 7