Summary of Product Characteristics

1 NAME OF THE MEDICINAL PRODUCT

Dr. Scheffler Vitamin C, 1000mg effervescent tablets

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Active substance:
1 effervescent tablet contains 1000 mg ascorbic acid (vitamin C).

Excipients with known effect:
Contains sodium (321 mg), orange yellow (E 110), azorubine (E 122) and sorbitol.

For the full list of excipients, please see section 6.1.

3 PHARMACEUTICAL FORM

Effervescent tablet.

Light pink coloured tablets with dark violet spots, odour of red orange.

4 CLINICAL PARTICULARS

4.1 Therapeutic Indications

Treatment of vitamin C deficiency diseases (e. g. scurvy).

4.2 Posology and method of administration

Posology
The following doses are generally recommended:
Adults are given one effervescent tablet (= 1000 mg of ascorbic acid) daily.

The therapy duration depends on the physiological need (e.g. in case of increased physical strain) and on condition associated with vitamin C deficiency (e.g. burns, alcoholism or scurvy). Vitamin C should be administered over the period of the physiological need or until the symptoms abate.

The maximum therapeutic dose of 1000 mg (1 tablet/day) should not be exceeded.

For patients with renal insufficiency, respectively, medicinal products containing lower doses of ascorbic acid are available.

Paediatric population
This strength is not recommended for children (below 18 years). For children medicinal products containing lower doses of ascorbic acid are available.

Method of administration
The effervescent tablets are dissolved completely in a glass of water. Should there be any residue in the empty glass, then this should be taken with more liquid.

4.3 Contraindications

Dr. Scheffler Vitamin C should not be used in**,** oxalate-urolithiasis and iron storage diseases (thalassaemia,

haemochromatosis, sideroblastic anaemia).

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

4.4 Special warnings and precautions for use

Due to the intake of high doses of vitamin C (≥ 4 g per day) by patients with an erythrocytic glucose-6-phosphate dehydrogenase deficiency, partly serious haemolyses have been observed in single cases. Therefore, exceeding the given dosing recommendations must be avoided.

Increased intake of ascorbic acid over a prolonged period may result in an increase in renal clearance of ascorbic acid and deficiency may result, if it is withdrawn.

In case of the susceptibility to renal calculi, there is the risk of the formation of calcium oxalate calculi due to the intake of high doses of vitamin C. Patients with recurring formation of renal calculi are recommended not to exceed a daily vitamin-C-uptake of 100 to 200 mg.

For patients with extreme or terminal renal insufficiency (patients of dialysis), respectively, a daily vitamin-C-uptake of 50 to 100 mg of vitamin C should not be exceeded, because otherwise, there is the risk of hyperoxalataemia and crystallisations of oxalate in the kidneys.

High dose vitamin C therapy should be avoided in patients with underlying renal insufficiency or urinary oxalate should be monitored in patients. Nephrotoxic symptoms can occur in patients with renal failure and patients who concomitantly use medicinal products with negative effect on the renal function, e.g. iron overload due to an enhanced iron reabsorption. See section 4.5.

This medicinal product contains 321 mg sodium per dose and has to be taken carefully in patients following salt restricted diet (e. g. hypertensive patients).

The administration of gram doses can elevate the ascorbic acid concentration in the urine to such a degree that the measurement of various clinical-chemical parameters (glucose, uric acid, creatinine, inorganic phosphate) is impaired. Likewise, gram doses can lead to false-negative results in the attempted detection of occult blood in the stools. Generally, chemical detection methods which are based on colour reactions can be affected.

The colourings contained in Dr. Scheffler Vitamin C - orange yellow S (E 110) and azorubine (E 122) - can cause allergic reactions, including asthma. Such allergic reactions can occur in particular in persons allergic to acetylsalicylic acid

This medicinal product contains sorbitol and therefore patients with rare hereditary problems of fructose intolerance should not take this medicine.

Paediatric population
This strength is not recommended for children (below 18 years).

4.5 Interaction with other medicinal products and other forms of interaction

Although the following interactions between vitamin C and other drugs have been described, their relevance at the proposed dosage is not documented:

Vitamin C in a dosage of 1 g daily increases the bioavailability of oral contraceptives (oestrogens).

Corticosteroids increase the oxidation of ascorbic acid.

Calcitonin increases the rate of vitamin C consumption.

Salicylates inhibit active transportation through the intestine.

Tetracyclines inhibit intracellular metabolism and reabsorption from the renal tubes. Acetylsalicylic acid, barbiturates and tetracyclines increase vitamin C excretion in the urine.

Several cases have been reported, in which ascorbic acid appeared to reduce the effect of warfarin.

Ascorbic acid can decrease the therapeutic effect of phenothiazines.

The concentration of fluphenazine may also be reduced.

High doses of vitamin C taken together with iron may cause an iron overload due to an enhanced iron reabsorption.

High doses of vitamin C taken together with aluminium may cause increased aluminium reabsorption.

Cyclosporine A bioavailability can be decreased by vitamin C. One case has been reported, in which the risk of cyanide toxicity has been increased by co-ingestion of mega doses of vitamin C and amygdalin.

Chronic use of high doses of ascorbic acid may interfere with disulfiram – alcohol interaction when used concurrently.

Alcohol reduces ascorbic acid levels.

4.6 Fertility, pregnancy and lactation

Pregnancy
It is not advisable to exceed the given dosage during pregnancy and lactation**.**
There is limited amount of data from the use of high dose vitamin C in pregnant women. It is not clear if vitamin C supplementation in amounts exceeding Dietary Reference Intake recommendations is safe or beneficial.

Breastfeeding
Ascorbic acid is secreted into breast milk and crosses the placental barrier by means of simple diffusion. There is insufficient information on the effects of high dose vitamin C in newborns/ infants. It is not clear if vitamin C supplementation in amounts exceeding Dietary Reference Intake recommendations is safe or beneficial.

Fertility
The effect of large doses on the fetus is not known.

4.7 Effects on ability to drive and use machines

Not relevant.

4.8 Undesirable effects

Respiratory and cutaneous hypersensitivity reactions have been observed in isolated cases.

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via

HPRA Pharmacovigilance,
Earlsfort Terrace, IRL - Dublin 2;
Tel: +353 1 6764971;
Fax: +353 1 6762517.
Website: http://www.hpra.ie/;
E-mail: medsafety@hpra.ie.

4.9 Overdose

See “Warnings” regarding the risk of renal calculi and haemolyses, respectively.

Temporary osmotic diarrhoea occasionally occurs after single doses of 3 g, and almost always after more than 10 g, accompanied by respective abdominal symptoms.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Ascorbic acid (vitamin C), ATC-Code: A11GA01

Vitamin C is essential to humans. Its components, ascorbic acid and dehydroascorbic acid, form an important redox system.

Vitamin C acts as a cofactor in numerous enzyme systems due to its redox potential (collagen formation, catecholamine synthesis, hydroxylation of steroids, tyrosine and exogenous substances, biosynthesis of carnitin, regeneration of tetrahydrofolic acid and alpha-amidisation of peptides, e.g. ACTH and gastrin).

Further, a deficiency of vitamin C affects the immune defence reactions, particularly chemotaxis, complement activation and interferon production. The molecular biological functions of vitamin C have not yet been fully explained.

Ascorbic acid improves the resorption of iron salts by reducing ferric ions and by forming iron chelates. It blocks the chain reactions in aqueous body compartments triggered by oxygen radicals.

The antioxidative functions produce biochemical interactions in close relation to those of vitamin E, vitamin A and carotinoids. As yet it has not been proven entirely that ascorbic acid causes a reduction of potentially carcinogenic substances in the gastrointestinal tract.

5.2 Pharmacokinetic properties

Ascorbic acid is absorbed in the proximal small intestine in a dose-dependent manner. The bioavailability drops with increasing dosage to 60 - 75% after 1 g, to approx. 40% after 3 g and approx. 16% after 12 g. The portion which is not absorbed is broken down by the large intestinal flora into CO_2 and organic acids.

The maximal metabolic turnover of 40 to 50 mg/day in healthy adults is reached at plasma concentrations of 0.8 to 1.0 mg/dl. The total daily turnover is about 1 mg/kg BW. Brief plasma concentrations of up to 4.2 mg/dl are achieved about three hours after applying extremely high oral doses.

Under these circumstances ascorbic acid is eliminated in the urine by up to 80%. The half-life constitutes 2.9 hours on average. Renal elimination ensues via glomerular filtration and subsequent reabsorption in the proximal tubule. The upper limits given for healthy adults are 1.34 ± 0.21 mg ascorbic acid/dl plasma in men and 1.46 ± 0.22 mg in women, respectively.

The total body content of ascorbic acid is at least 1.5 g following a high dose of about 180 mg daily. Ascorbic acid is concentrated in the pituitary gland, adrenal glands, lenses of the eye and white blood cells.

5.3 Preclinical safety data

Non-clinical data reveal no special hazard for humans based on studies of single and repeated dose toxicity, genotoxicity, carcinogenic potential, toxicity to reproduction.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Anhydrous citric acid, sodium hydrogen carbonate, sorbitol orange flavouring with orange oil and maltodextrin, maize starch, sodium cyclamate, accharin sodium, povidone K25

Colourings: orange yellow (E 110), azorubine (E 122) and indigo carmine (E 132).

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

3 years.

After the first opening of the container, the shelf life of this medicinal product is three months.

6.4 Special precautions for storage

Do not store above 25 °C. Keep the container tightly closed to protect from moisture. Store in the original packaging in order to protect from light.

6.5 Nature and contents of container

10, 20 or 60 effervescent tablets in tubes (polypropylene) closed with stoppers (polyethylene) equipped with desiccant (silica gel). The carton (10 or 20 effervescent tablets) contains one tube or three tubes (60 effervescent tablets).

Not all pack sizes may be marketed.

6.6 Special precautions for disposal and other handling

No special requirements.

7 MARKETING AUTHORISATION HOLDER

Dr. B. Scheffler Nachf GmbH
Senefelderstrasse 44
D-51469 Bergisch Gladbach
Germany

8 MARKETING AUTHORISATION NUMBER

PA 0998/001/001

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 19 October 2001

Date of last renewal: 2 February 2009

10 DATE OF REVISION OF THE TEXT

October 2014