16 September 2010
EMA/HMPC/246799/2009
Committee on Herbal Medicinal Products (HMPC)

Assessment report on *Euphrasia officinalis* L. and *Euphrasia rostkoviana* Hayne, herba

<Based on Article 10a of Directive 2001/83/EC as amended (well-established use)>

<Based on Article 16d(1), Article 16f and Article 16h of Directive 2001/83/EC as amended (traditional use)>

Final

Herbal substance(s) (binomial scientific name of the plant, including plant part)	*Euphrasia officinalis* L. and *Euphrasia rostkoviana* Hayne, herba
Herbal preparation(s)	a) Comminuted herbal substance b) Tincture 1:5; extraction solvent ethanol 45% V/V
Pharmaceutical forms	- Comminuted herbal substance as herbal tea for oral or ocular use. - Herbal preparations in liquid or semi-solid dosage forms for ocular or nasal use.
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1. Introduction

This assessment report reviews the scientific data available for *Euphrasia officinalis* L. and *Euphrasia rostkoviana* Hayne, herba. The classification of the genus *Euprasia* differs greatly in the literature and is to some extent contradictory. Some authors consider *Euphrasia officinalis* L. the same as *Euphrasia rostkoviana* Hayne whereas others consider *E. rostkoviana* Hayne as a subspecies of *E. officinalis* L.[1]. According to some taxonomists, *E. officinalis* L. is also called *E. stricta* Wolff. (Heimans et al. 1983). However, other sources make a distinction between both species. *Euphrasia* or eyebright belongs to the botanical family of the *Scrophulariaceae*.

The following databases were assessed:

- PubMed, until February 2009;
- The Cochrane Library, December 2008;
- OvidMedline, December 2008;
- Embase, December 2008;

Search terms: Euphrasia, Eyebright, Euphrasia and officinalis.
Apart from these sources standard books on phytotherapy were reviewed (see literature references).

1.1. Description of the herbal substance(s), herbal preparation(s) or combinations thereof

- Herbal substance(s)

The herbal substance described in the Hagers Handbuch der pharmazeutischen Praxis as the dried total herb of *Euphrasia officinalis* harvested before flowering and dried out under sunlight in a well-ventilated area (Blascheck 1998). In the Deutsche Arzneimittel Codex, DAC, (Anonymous 2003) 'Augentrostkraut' is described as: "… aus den zur Blütezeit gesammelten, getrockneten, ganzen oder geschnittenen oberirdischen Teilen verschiedener *Euphrasia*-Arten, besonders der Gruppen *E. stricta* D. Wolff ex F. J. Lehm., *E. rostkoviana* Hayne (*E. officinalis* L. p. p.) (*Scrophulariaceae*), deren Bastarde oder Mischungen davon ...".

According to the information in the DAC, the plant is collected in the flowering status.
The species used are confirmed.
Therefore, for the purpose of the establishment of a Community herbal monograph, in the herbal substance definition, flowers are also included in the herb.

Euphrasia is also known under the common names:

English: Eyebright
German: Augentrost
French: Euphraise, Casse-Lunettes
Dutch: Ogentroost
Danish: Øjentrøst
Spanish: Ojo brillante
Lituanian: Akišveité
Norvegian: Augetrøst
Polish: Świetlik
Swedish: Ögontröstsläktet

1 Euphrasia officinalis is considered as an ambiguous name (De Langhe et al. 1988) Flora van België, het Groothertogdom Luxembrug, Noord-Frankrijk en de aangrenzende gebieden. Patrimonium van de Nationale Plantentuin van België).

Other species

Euphrasia stricta Host. is a well known European species (2 to 40 cm high), of which the aerial parts are harvested during flowering. *Euphrasia stricta* (Host.) can be differentiated from *Euphrasia officinalis* L. by the presence of curved hairs on the tops of the leaves (Schulze & Diepenbrock 1944).

- Constituents (Blazics 2008)

- Flavonoids: 0.38%: apigenin, luteolin, kaempferol, rhamnetin, quercetin

- Polyphenols: 1.47%
- Phenolic acids: caffeic acid and its ester derivatives, chlorogenic acids and coumaric acids
- Hydroxycinnamic derivatives: 1.97%
- Tannins: 0.56%
- Iridoids: aucubin 0.05%

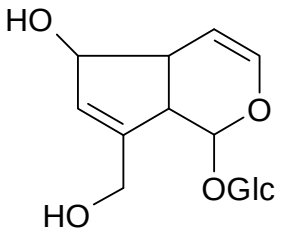

Figure 1: aucubine

Chudnicka (2005) showed that eyebright contains acidic phosphatases and naphtol-AS-BI-phosphohydrolase.

- Herbal preparation(s)

a) Comminuted herbal substance for tea infusion (2-3% w/v; water) (Delfosse 1998; Weiss 1999; Van Hellemont 1985; Wichtl 1994)

b) Tincture 1:5 in ethanol 45% V/V (Barnes 2007)

- Combinations of herbal substance(s) and/or herbal preparation(s) including a description of vitamin(s) and/or mineral(s) as ingredients of traditional combination herbal medicinal products assessed, where applicable.

- Infusion: 50% Camomille flower and 50% eyebright herb. Five soupspoons dried herb in 0.25 l freshly boiled water.

- Infusion: 60% eyebright herb, 20% melilot herb and 20% plantain herb. One soupspoon dried herb in a cup of freshly boiled water. After fifteen minutes the infusion is passed through a filtering tissue and applied as an ocular compress.

- Tincture: 50% eyebright tincture, 35% passionflower tincture and 15% belladonna tincture. Twenty drops in 15 ml of water can be taken orally up to four times a day.

1.2. Information about products on the market in the Member States

Regulatory status overview

Member State	Regulatory Status				Comments (not mandatory field)
Austria	☐ MA	☐ TRAD	☒ Other TRAD	☐ Other Specify:	Only homeopathic products
Belgium	☐ MA	☐ TRAD	☒ Other TRAD	☐ Other Specify:	Homeopathic products[2] and non registered eye drops. A simplified registration procedure is allowed.
Bulgaria	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	Only in homoeopathic products
Cyprus	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No information
Czech Republic	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Denmark	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Estonia	☐ MA	☐ TRAD	☐ Other TRAD	☒ Other Specify:	Food supplements
Finland	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No information
France	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No information
Germany	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Greece	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No information
Hungary	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No information
Iceland	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Ireland	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Italy	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Latvia	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No information
Liechtenstein	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No information
Lithuania	☐ MA	☐ TRAD	☒ Other TRAD	☐ Other Specify:	Multicompound homeopathic products
Luxemburg	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No information
Malta	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations

[2] The following preparations could be identified in Belgium (they can be considered as homeopathic preparations without a tradition of at least 30 years):
- Eye drops: 0.045g mother tincture per 100 mL.
- Eye drops in single doses: 0.05g mother tincture per 100 mL.
- Fixed combination with homeopathic preparations
- Euphrasia stillidoses D2: solvent = aqua purificata

Member State	Regulatory Status				Comments (not mandatory field)
The Netherlands	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Norway	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Poland	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No information
Portugal	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Romania	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No information
Slovak Republic	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Slovenia	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
Spain	☐ MA	☐ TRAD	☒ Other TRAD	☐ Other Specify:	Only combined preparations used as an eye wash
Sweden	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations
United Kingdom	☐ MA	☐ TRAD	☐ Other TRAD	☐ Other Specify:	No authorized or registered preparations

MA: Marketing Authorisation
TRAD: Traditional Use Registration
Other TRAD: Other national Traditional systems of registration
Other: If known, it should be specified or otherwise add 'Not Known'
This regulatory overview is not legally binding and does not necessarily reflect the legal status of the products in the MSs concerned.

1.3. Search and assessment methodology

2. Historical data on medicinal use

2.1. Information on period of medicinal use in the Community

Felter (1922), Felter and Lloyd (1898) as well as Grieve (1931) give an extended historical overview of the traditional use of Euphrasia.

According to Grieve (1931) the name *Euphrasia* is of Greek origin, derived from *Euphrosyne* (gladness), the name of one of the three graces who was distinguished for her joy and mirth, and it is thought to have been given the plant from the valuable properties attributed to it as an eye medicine preserving eyesight and so bringing gladness into the life of the sufferer. The same Greek word is also given to the linnet, whence another old tradition says that it was the linnet that first made use of the leaf for clearing the sight of its young and who then passed on the knowledge to mankind, who named the plant in its honour.

Grieve further states that although always known under a name of Greek origin, the herb seems to have been unnoticed by the ancients and no mention of it is made by Dioscorides, Pliny, Galen or even by the Arabian physicians. In the fourteenth century, however, it was supposed to cure 'all evils of the eye' and is described as the source of 'a precious water to clear a man's sight'. Matthaeus Sylvaticus, a

physician of Mantua, who lived about the year 1329, recommended this plant in disorders of the eyes and Arnoldus Villanovanus, who died in 1313, was the author of a treatise on its virtues, *Vini Euphrasiati tantopere celebrati*. How long before Euphrasia was in repute for eye diseases it is impossible to say, but in Gordon's *Liticium Medicina*, 1305, among the medicines for the eyes, *Euphragia* is named and is recommended both outwardly in a compound distilled water and inwardly as a syrup. *Euphragia* is not, however, mentioned in the *Schola Salernitana*, compiled about 1100.

Grieves states that *Euphrasia* is used in a European tradition since the fourteenth century. It was supposed to cure 'all evils of the eye'. Paracelsus also recognised the structure of an eye in the plant. Many literatures of different European countries from the late eighteenth and early nineteenth century refer to eyebright "as a solution for all the eye problems". *Euphrasia* is mentioned in standard works such as *The British flora medica* (Barton and Castle 1837), *Reine Arzneimittellehre* (Hahnemann 1826), *Flora parisiensis* (Bulliard 1779), *Flora veneta* (Naccari 1827), *Flora Scotica* (Lightfoot 1777) and *Afbeeldingen der artsenygewassen met derselver nederduitsche en latynse beschryvingen* (Oskamp 1796).

Felter and Lloyd (1898) report slightly tonic and astringent activity. Quoting the authors, Euphrasia was used with much benefit in the form of infusion or poultice, in *catarrhal ophthalmia*, also of service in all mucous diseases attended with increased discharges; and in *cough, hoarseness, earache,* and *headache,* which have supervened in *catarrhal affections*. It is said to specifically influence the nasal membranes and lachrymal apparatus. In *acute catarrh (fluent coryza)*, in which there is a profuse watery flow, it is reported to exert its most specific action. It has been attributed great utility to control inflammatory and catarrhal phases of the parts during or following an attack of *measles,* as it has been thought to avert unpleasant aftereffects, as *catarrhal conjunctivitis, nasal catarrh, catarrhal deafness,* etc. *Catarrhal diseases of the intestinal tract* were treated with Euphrasia. Four fluid ounces of the infusion taken every morning upon an empty stomach, and also every night at bedtime is asserted to have been found successful in curing *epilepsy*.

The *Ergänzungsbuch zum Deutschen Arzneibuch* included *Euphrasia* as a rinsing solution prepared as a 2% infusion.

2.2. Information on traditional/current indications and specified substances/preparations

The comminuted herbal substance is mainly used as herbal tea for external ocular application (i.e. conjunctivitis, blepharitis, styes,…). Secondly, the comminuted dried herb is used as an infusion for internal administration in case of common cold and eye problems. Thirdly, herbal preparations can be applied as a nasal ointment against a runny nose. There is only poor clinical evidence as the data available are scarce. Eyebright is listed by the Council of Europe as a natural source of food flavouring (category N3) (Anonymous 2010).

- Traditional herbal medicinal product for symptomatic treatment and prevention of conjunctivitis of any etiology (allergic, irritative, infectious) (Barnes 2007; Blascheck 1998; Delfosse 1998; Van Hellemont 1985; Weiss 1999; Wichtl 1994).
- Traditional herbal medicinal product for symptomatic treatment of minor ocular diseases; for example blepharitis, eye fatigue, purulent ocular inflammation and styes (Barnes 2007; Blascheck 1998; Delfosse 1998; Van Hellemont 1985; Weiss 1999; Wichtl 1994).
- Traditional herbal medicinal product for symptomatic treatment of cold (Delfosse 1998).

Some sources are expressing doubts about the safe ocular use of Euphrasia preparations as their efficacy is undocumented and the hygienic conditions of applying *ex tempore* made infusions on the eye are not acceptable (Gruenwald et al. 2007; British Herbal Pharmacopoeia 1983).

2.3. Specified strength / posology / route of administration / duration of use for relevant preparations and indications

- Liquid preparations used for conjunctivitis and minor ocular affections
  Application: oral and external use
  Posology:
  Homeopathic eye drops (D_3=0.1%): one drop 3 times daily (Stoss et al. 2000).

  Eye rinse, ocular compress: tea is prepared by pouring freshly boiled water over two to three grams of the dried substance (2-3%). After five to ten minutes, the tea is passed through a filtering tissue and applied several times a day (Wichtl 1994).

- According to Williamson (2003) the powdered herbal substance in a dose of 2-4 g is used by infusion for catarrh or as an eye lotion.
  Oral use: an infusion of one teaspoon dried herb in 0.5 l freshly boiled water (Weiss 1999).

- Liquid preparations in case of common cold
  Application: oral use
  Posology:
  Tincture 1:5 ethanol 45% V/V: 50 drops 3 to 5 times a day (Delfosse 1998; Barnes 2007; Van Hellemont 1985).

- Nasal ointment for a runny nose (Van Hellemont 1985)
  Application: external use
  Posology:

Euphrasia tincture[3]	5 g
Lanoline	5 g
Vaseline	15 g
Bergamot essence	2 drops

1 application 3 times a day in each nostril.

- According to old references, the juice obtained by expression from the plant in the fresh state is sometimes employed, or an infusion in milk, but the simple infusion in water is the more usual form in which it is applied. An infusion of 1 OZ[4] of the herb to a pint[5] of boiling water should be used and the eyes bathed three or four times a day. When there is much pain, it is considered desirable to use a warm infusion rather more frequently for inflamed eyes till the pain is removed. In ordinary cases, the cold application is found sufficient.

In Iceland, the expressed juice is used for most ailments of the eye, and in Scotland the Highlanders make an infusion of the herb in milk and anoint weak or inflamed eyes with a feather dipped in it (Grieve 1931).

[3] No information about drug extract ratio or degree of ethanol is given.
[4] OZ = 28 g
[5] Pint = 237 ml

3. Non-Clinical Data

3.1. Overview of available pharmacological data regarding the herbal substance(s), herbal preparation(s) and relevant constituents thereof

Porchezhian et al. (2000) tested the anti-hyperglycemic effects of *Euphrasia officinalis* on wistar albino rats. Hyperglycemia was induced by an intraperitoneal injection of alloxan monohydrate. 100 grams of air-dried leaves from *Euphrasia officinalis* growing in Nilgiri district (India) were extracted with hot distilled water and dried using a vacuum rotating evaporator. The obtained extract was used in the experiment (600 mg extract per kg bodyweight).
In the first part of the experiment, there were three groups of rats (fasted overnight): control group (distilled water), test group (600 mg *Euphrasia* extract per kg, p.o.) and a reference group (phenformin, 600 mg/kg, p.o.). The control group received only the vehicle in which alloxan was dissolved; the other two groups received alloxan.
The administration of alloxan showed a rise in the blood glucose levels as compared to the control group. Three to six hours after oral administration of the aqueous extract of *Euphrasia* to diabetic rats, the blood glucose level had significantly dropped (P<0.01), while the control group showed no significant reduction of the blood glucose level.

The effect of oral administration of *E. officinale* aqueous extract on the blood glucose level in alloxan-diabetic rats[a]

Sampling time (h)	Blood glucose (mg/dl)		
	Control (distilled water, 10 ml/kg, p.o.)	Phenformin (600 mg/kg, p.o.)	*E. officinale* (600 mg/kg, p.o.)
0	303.0 ± 12.4	309.5 ± 15.4	302.1 ± 11.5
1	309.8 ± 12.7	245.0 ± 18.8*	262.4 ± 18.7
2	320.0 ± 11.2	191.3 ± 18.3*,**	198.9 ± 18.3*,**
3	328.3 ± 16.1	123.6 ± 19.2*,**	193.8 ± 9.8*,**
6	338.6 ± 14.4	127.7 ± 18.2*,**	184.2 ± 8.1*,**

[a]Values are expressed as mean ± S.E.M., $n = 8$; *$P < 0.001$ vs. control; **$P < 0.01$ vs. zero time, Student's t-test.

In the second part of the experiment, the effect of *Euphrasia* on normoglycemic rats was tested. Again there were three groups of rats (fasted overnight): control group (distilled water, test group (600 mg *Euphrasia* extract per kg, p.o.) and a reference group (phenformin, 600 mg/kg, p.o.). There was no alloxan administered.
Treatment with the extract showed no significant decrease in blood glucose levels in normoglycemic rats (P<0.01).

The effect of oral administration of *E. officinale* aqueous extract on the blood glucose level in normoglycemic rats[a]

Sampling time (h)	Blood glucose (mg/dl)		
	Control (distilled water, 10 ml/kg, p.o.)	Phenformin (600 mg/kg, p.o.)	*E. officinale* (600 mg/kg, p.o.)
0	99.0 ± 6.23	102.3 ± 7.6	96.7 ± 5.48
1	92.3 ± 5.92	98.3 ± 3.18	91.3 ± 5.44[c]
2	88.8 ± 14.4	83.9 ± 3.66[c]	97.8 ± 8.28[b]
3	96.1 ± 7.22	92.0 ± 3.42[c]	98.9 ± 8.80
6	96.4 ± 3.21	94.0 ± 6.02[c]	97.2 ± 6.24

[a]Values are expressed as mean ± S.E.M., $n = 8$; [b]$P < 0.001$ vs. control; [c]$P < 0.01$ vs. zero time, Student's t-test.

3.2. Overview of available pharmacokinetic data regarding the herbal substance(s), herbal preparation(s) and relevant constituents thereof

No data available.

3.3. Overview of available toxicological data regarding the herbal substance(s)/herbal preparation(s) and constituents thereof

Porchezhian et al. (2000) investigated the acute toxicity of aqueous eyebright extract on wistar albino rats. 100 grams of air-dried leaves from *Euphrasia officinalis* growing in Nilgiri district (India) were extracted with hot distilled water and dried using a vacuum rotating evaporator (DER=4:1). The obtained extract was used in the experiment (600 mg extract per kg bodyweight). Graded doses ranging from 0.1 to 6 g/kg were orally administered to groups of six rats and observed for 72 h. There were no symptoms of toxicity seen.

Tests on reproductive toxicity, genotoxicity and carcinogenicity have not been performed.

3.4. Overall conclusions on non-clinical data

In general there is a discrepancy between the traditional use and the non-clinical data, as these data are not related to ocular use. Safety data on ocular use are not available either. From a phytopharmacological point of view *Euphrasia* may be associated with different effects: adstringent (due to the tannins) and anti-inflammatory (due to the iridoids). However, no studies have been performed.

4. Clinical Data

4.1. Clinical Pharmacology

No data available.

4.1.1. Overview of pharmacodynamic data regarding the herbal substance(s)/preparation(s) including data on relevant constituents

No data available.

4.1.2. Overview of pharmacokinetic data regarding the herbal substance(s)/preparation(s) including data on relevant constituents

No data available.

4.2. Clinical Efficacy

4.2.1. Dose response studies

No data available.

4.2.2. Clinical studies (case studies and clinical trials)

Stoss (2000) (also cited by Mills 2005) performed an open prospective cohort trial of a homeopathic fixed combination with an *Euphrasia-preparation* single-dose eye drops in conjunctivitis. Eighty patients were enrolled. The eye drops contained 10 g *Euphrasia* 33c D3 and 10 g *Rosae* aetheroleum D7.
The recommended dose was one drop 1-3 (up to 5) times a day during fourteen days. As efficacy parameters the variables "reddening", "swelling", "secretion", "burning of the conjunctiva" and "foreign body sensation" were investigated as therapeutic outcomes. Undesirable effects were also observed and documented.
In 81% of the patients, there was complete recovery. Only one case showed a slight worsening of the symptoms. The tolerability of the medication was very good.
No undesirable serious adverse events occurred due to the medication during the entire prospective cohort trial. No conclusion on efficacy and safety of herbal preparations can be drawn from this study.

4.2.3. Clinical studies in special populations (e.g. elderly and children)

Stoffel (2007) performed a pilot project to investigate the effect of local application of eye drops with a Swiss Euphrasia-preparation (exact composition not given) on antibiotic consumption by 44 neonates. They selected neonates with redness and lacrymation of the eyes. Before the treatment, they performed a culture of the eyefluid.
There were 2 groups: in the control group (20 neonates) the eyes of the neonates were washed every six hours with NaCl 0.9% and in the test group (24 neonates) the eyes were washed every six hours with NaCl 0.9% and additionally one drop of *the eye drops* was administered. If the doctors considered the treatment after 48 hours as "successfull", it was not changed. If they considered the treatment as "not successfull", the treatment changed to Neosporin-Augentrophen®. The criteria for this decision were a worsening of the symptoms or a positive culture. Seven neonates of the test group and 3 of the control group had to change to Neosporin-Augentrophen®. Cultures of 11 neonates were positive for *Staphylococcus aureus*, but there was no need to change the treatment because the symptoms had ameliorated.
The authors concluded that there was no difference between the control group and the test group and so immediate antibiotic treatment is not always necessary. There were no side effects reported.
The number of subjects was low and there was no appropriate statistical evaluation of the results. No conclusions on efficacy and safety of herbal preparations can be drawn from this study.

4.3. Overall conclusions on clinical pharmacology and efficacy

The two published studies are of limited value. First, the studies do not relate to defined herbal medicinal products/herbal preparations. The open design of the first one is not reliable to confirm whether the therapeutic effect is due to the preparation or to spontaneous healing. The second study

with the neonates is not conclusive due to the limited number of patients and divergent outcomes. No adverse effects were reported, but this finding is also not conclusive because of the small-scale of the trials. As a consequence they do not contribute to confirm a safe and plausible use of the relevant herbal preparations.

5. Clinical Safety/Pharmacovigilance

5.1. Overview of toxicological/safety data from clinical trials in humans

In the study performed by Stoss (2000) no serious adverse events were reported.

5.2. Patient exposure

No data available.

5.3. Adverse events and serious adverse events and deaths

No data available.

5.4. Laboratory findings

No data available.

5.5. Safety in special populations and situations

No data available.

5.6. Overall conclusions on clinical safety

The clinical studies reported above involved 124 patients. The number is too small to draw any conclusions on clinical safety. As up to now no authorized or registered medicinal preparations are on the market in Europe, no periodic safety update reporting has been established.

6. Overall conclusions

Traditional herbal preparations from Euphrasiae herba are mainly liquid water extracts which are *ex tempore* made as infusions for application as an ocular impregnated dressing for symptomatic treatment of minor irritation of the eye". A nasal ointment containing an *Euphrasia* tincture[6] 20% as a traditional herbal medicinal product for the relief of local nasal irritation in common cold has also been described.

No adequate data are however available for these preparations concerning their safe use. The quality and safety of *ex tempore* preparations for ocular use does not correspond to current standards for ocular preparations.

6.1. Risk – benefit analysis

Quality

A monograph on *Euphrasia officinals* L. or *Euphrasia rostkoviana* Hayne, herba does not exist in the current European Pharmacopoeia. There is no major concern about adulteration with related species as

[6] Specifications of the tincture not available.

Euphrasia stricta Wolff. (=*E. stricta* Host.) can be differentiated from *Euphrasia officinalis* L. by the presence of curved hairs on the tops of the leaves.

Safety

There are no reports about serious adverse events or drug-drug interactions with Euphrasia preparations. Also from very limited non-clinical experiments, no acute toxic effects were reported. Data on ocular toxicity/local tolerance is missing. In order to avoid deterioration of ocular conditions, medical supervision is necessary when the symptoms do not improve within 2 days. There is only one study with a limited amount of paediatric patients, not resulting in serious adverse events.

Some references provide instructions to make *ex tempore* preparations as infusions to use on the eye. However, the quality and safety of these preparations cannot be guaranteed.

Efficacy

From the presence of secondary metabolites, an astringent and anti-inflammatory activity can be hypothesized for Euphrasia preparations. The ocular use of Euphrasia is based upon a long-standing tradition. However, since the efficacy of the claimed ocular uses is undocumented and external eye application is not hygienic, therapeutic use cannot be recommended.

An ointment made with Euphrasia tincture has been documented as a traditional herbal medicinal product for the relief of local nasal irritation in common cold. However no information is available about the tincture, safety and plausibility of use.

Conclusion

Based on the above-mentioned concerns, no Community herbal monograph or list entry on *Euphrasia officinalis* L. and/or *Euphrasia rostkoviana* Hayne, herba can be established.

Annex

List of references