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**POSSIBLE USES OF SEGETAL PLANTS OF THE CLASS *STELLARIETEA MEDIAE*
IN BALNEOPHYTOTHERAPY AT POLISH HEALTH RESORTS**

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ABSTRACT: Balneophytotherapy is the branch of health therapeutics which uses for curing and preventing some diseases different natural health balneological materials, such as mud, hay and natural plant substances. In their therapeutic programmes, individual health resorts in Poland usually concentrate not only on pathophysiology, but also on preventive action. The applicability of prevention programmes, for example, the methods of Sebastian Kneipp, especially in the case of civilisation diseases, has outlined a new role for Polish spas which had previously been linked mainly with physioprevention. Expansion of treatment offers as well as proof of a new standardised form of therapy, e.g. phytobalneological procedures with the use of field weeds, i.e. segetal plants, as an addition to hydrotherapeutic treatments, has

become an unusually interesting form of preventive measure. Despite the wide use of this kind of therapy in spas, there are only a few scientific publications on this topic. Anthropogenic nitrophylic communities of cultivated fields belong to the class of *Stellarietea mediae*. In Poland eight species of segetal plants with healing qualities occur. The present note is a contribution to further clinical studies, focusing on issues surrounding the use of segetal plants in balneophytotherapy.

KEY WORDS: segetal plants, anthropogenic nitrophylic communities of cultivated fields, balneotherapy, health resorts, Poland

Introduction

Balneophytotherapy is the branch of health therapeutics which uses for curing and preventing some diseases different natural health balneological materials, such as mud, hay and natural plant substances (e.g. Frochlich and Müller-Limmroth 1976; Gutenbrunner and Hildebrandt 1998; Spałek and Trzewikowska 2007; Brinkhaus et al. 2009; Spałek et al. 2010, 2011; Spałek and Spielvogel 2012). In their therapeutic programmes, individual health resorts in Poland usually concentrate not only on pathophysiology, but also on preventive action. The applicability of prevention programmes, for example, the methods of Sebastian Kneipp, especially in the case of civilisation diseases, has outlined a new role for Polish health resorts which had previously been linked mainly with physioprevention (Trzewikowska 2003; Spałek and Trzewikowska 2007). Expansion of treatment offers as well as proof of a new standardised form of therapy, e.g. phytobalneological procedures with the use of semi-cultivated weeds, i.e. segetal plants, as an addition to hydrotherapeutic treatments, has become an unusually interesting form of preventive measure.

Anthropogenic nitrophylic communities of cultivated fields belong to the class of *Stellarietea mediae* and comprise a separate group of ecosystems which appear spontaneously

under conditions of extreme human pressure (Oberdorfer 1994; Pott 1995; Schubert et al.1995; Ellenberg 1996; Matuszkiewicz 2007). Despite the wide use of this kind of therapy in health resorts, there are only a few scientific publications on this topic. The present note is a contribution to further clinical studies, focusing on issues surrounding the use of segetal plants in balneophytotherapy.

Methods

Anthropogenic nitrophylic communities of cultivated fields belong to the class of *Stellarietea mediae* were studied with the methods of the Zurich-Montpellier School of Phytosociology (Braun-Blanquet 1964). The phytosociological nomenclature and the syntaxonomical appendix are based on Oberdorfer (1994) and Matuszkiewicz (2007). The species names of vascular plants are given according to Mirek et al. (2002). Healing properties of herbs were given for Strzelecka and Kowalski (2000).

The curative effect of segetal plants in balneotherapy treatments

So far in health resorts, especially in Western Europe, in balneofitotherapy was used straw *Avena sativa* according to Sebastian Kneipp's therapeutic methods (Kneipp 1910). It comprises variety of pharmacological active compounds, such as: water-soluble silica, saponins, carbohydrates, starch, gramine (indole colloid). Sebastian Kneipp recommended a decoction of oat straw as an expectorant remedy, analgesic in rheumatic diseases, kidney diseases and skin diseases, it also strengthens the body during recovery (Kneipp 1910; Straburzyński 1997; Lindström and Kriksson 2006). Internally, it is used as an aid to help falling asleep. *Avena sativa* in balneofitotherapy is used as infusions, steams, inhalation, total and half-warm baths, sitting baths and $\frac{3}{4}$ baths.

Table 1. Pharmacologically active substances of segetal plants in balneophytotherapy

Species	Pharmacologically active substances
<i>Adonis aestivalis</i>	cardiac glycosides, strophantogins, periplogins, adoniotoksygeins, bioflavonoids, sugar alcohol
<i>Agrostemma githago</i>	an admixture of triterpenoid saponins with strong homoeopathic impact, gita genina, kwila acid
<i>Centaurea cyanus</i>	anthocyanic glycosides, bioflavonoids, bitter compounds, manganese salts
<i>Chamomilla recutita</i>	spiroeter, bioflavonoids, coumarins, mucous compounds
<i>Galeopsis tetrahit</i>	bioflavonoids, iridoids, saponins, organic acids such as salicylic and coffeine, mineral salts, consisting of up to 0,25% of water-soluble silica.
<i>Papaver rhoeas</i>	alkaloids of the papaver group, isochinoline alkaloids, anthocians, mucilaginous compounds of up to 10 %, mineral salts.
<i>Viola arvensis</i>	bioflavonoids, anthocyanins, phenol acids, carotenoids, saponins, mucus, tannins

On the one hand, the increased interest in the use of plants for medicinal purposes can be linked to the development of the pharmaceutical industry and simultaneously to increased treatment expenditure in general, which has prompted the World Health Organisation to assess the potential of herbs which had previously not been considered (Strzelecka and Kowalski 2000). On the other, this tendency is connected with the discovery and introduction into treatments of some compounds of plant origin, which appeared to be conducive in recovery as well as in disease prevention. Compounds extracted from plants include a wide

array of substances used in medicine such as alkaloids (e.g. quinine against malaria; morphine against extreme pain; cardiac glycosides, tannins and lead sulphites (galena) prepared from different plant materials, including, in addition to ballast products, some active compounds with a specific effect (Table 1). In balneophytotherapy segetal plants are used as extracts, decoctions and dried infusions, and baths. On average, to prepare a complete bath, 250g of dried plant are consumed; for half a bath 125 g are needed, and for a hip bath 100g. The temperature of a warm bath should reach 38°C, lasting up to 20 minutes.

Discussion

Segetal plants are well suited for use in balneotherapy and medicinal spas. Based on current knowledge, these plants can be used in balneotherapy in prevention and therapy of numerous ailments. In Poland eight curative species of segetal plants occur, all of them belonging to the class of *Stellarietea mediae* (Table 2).

Table 2. Indications for use of segetal plants in terms of therapeutic effects during treatment.

Species	Pharmacological properties	Indications	Treatment type
<i>Adonis aestivalis</i>	Cardiac glycosides increase myocardial contractile powers; increase myocardial ejection volume, slightly lowering of heart rate, diuretic, calming down	Myocardial insufficiency, swelling against circulatory, slight circulatory disorders.	Warm full bath, half-0 bath, hip bath and three-quarter-bath
<i>Agrostemma githago</i>	Antiseptic, disinfectant	Pustules, breakouts, eczema, cleansing of minor cuts and epidermal abrasions	Wraps, warm full bath, half bath, hip bath and three-quarter-bath
<i>Centaurea cyanus</i>	Diuretic, against inflammations	Inflammation of urinary tracts	Warm full bath, half bath, hip bath and three-quarter-bath
<i>Chamomilla recutita</i>	Against inflammations, bactericidal, antiseptic, antispasmodic	Slow-healing wounds, burns, skin ulcers, varicose leg ulcers and decubitus ulcers	Wraps, warm full bath, half bath and three-quarter-bath

<i>Galeopsis tetrahit</i>	Expectoration	Diseases of upper respiratory tracts, dry cough, usual respiratory infections during childhood	Infusions, steam baths, inhalations, warm full bath, half bath, hip bath and three-quarter-bath
<i>Papaver rhoeas</i>	Coating for mucous membranes of upper respiratory tract, reduction of irritation, stimulation of movement of ciliated epithelium, facilitation of expectoration, external reduction of skin inflammation and mucous membranes	Diseases of upper respiratory tract, dry cough, usual respiratory infections during childhood, dermatosis, dermatological diseases with skin inflammation and mucous membranes	Infusions, steam baths, inhalation, warm full bath, half bath, hip bath and three-quarter-bath
<i>Viola arvensis</i>	Diuretic, diaphoretic, facilitating removal of waste products, expectoration	Inflammation, cracks and flaking of skin, eczema, diseases of upper respiratory tracts	Inhalations, warm full bath, half bath, hip bath and three-quarter-bath

Papaver rhoeas can be used in the treatment of diseases of the upper respiratory tract, dry cough, the usual respiratory infections during childhood, dermatosis, dermatological diseases with skin inflammation and mucous membranes. *Viola arvensis* is useful in the treatment of inflammatory conditions, cracked and flaking skin, eczema and diseases of the upper respiratory tract. *Centaurea cyanus* is useful in balneotherapy in the treatment of urinary tract inflammation, and wild camomile *Chamomilla recutita* is helpful during the curation of slow-healing wounds, burns, skin ulcers, varicose leg ulcers and decubitus ulcers. *Adonis vernalis* added to bath water stabilises, amongst other things, slight circulatory disorders and reduces swellings in background circulation. *Agrostemma githago* is recommended for use in wraps, warm full baths, half baths, hip baths and three-quarter-baths, to help treat dermatological problems such as rash breakouts and eczema, as well as to cleanse minor cuts and epidermal abrasions. *Galeopsis tetrahit* is listed as an addition to hydrotherapy in curing diseases of the upper respiratory tract, extending with dry cough in adults, as well as the usual respiratory infections during childhood.

So far, usually in spa therapy, no attention was paid to the occurrence of weeds with medicinal properties in the straw which derived from extensive field crops with weed communities of class *Stellarietea mediae*. Thanks to their medicinal properties, the scope of using the straw in balneofitotherapy in Polish health resorts can be significantly extended. The most valuable in terms of use in spas is a group of balneofitotherapy *Aphano-Matricarietum* with characteristic medicinal species - *Chamomilla recutita* and *Papaveretum argemones* whose characteristic therapeutic species is *Papaver Argemone*. These groups belong to the *Aperion spicae-venti*, in other words, groups of weeds of cereal crops which grow on non-lime soils best developed in winter crops. *Aphano-Matricarietum* is a West Central-European group with a strong suboceanic character, in Poland that reaches the Eastern border of range. *Papaveretum argemones* is a prevalent group of cereal crops throughout the country, however in some regions, e.g. in Wielkopolska it is one of the most common segetal communities on light soils (Matuszkiewicz 2007).

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