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Research Article

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Pharmacological effects of *Echinacea purpurea* extract in the treatment of infectious diseases

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ABSTRACT

Coneflower is one of the herbs used in traditional medicine has an important role. The use of this plant in the treatment of infectious diseases caused by fungal and bacterial contamination is a good result. Root, stem and leaf coneflower can be used. The extract of this plant caused to increase the amount of interferon and anti-inflammatory effect. Helps to scare treatment and increase the production of white blood cells are the results of the coneflower extract.

Keywords: Coneflower, Herbal Drug, Disease

INTRODUCTION

Coneflower is one of the most important medicinal plants which are used in developed countries for curing many diseases like chilling, viral infections and cancer [1]. Many researches about pharmaceutical properties of this plant have been done to determine effective matters and effect mechanism of this plant. Therefore, coneflower is proposed these days as an immune system stimulator [2].

Extant matters in roots and vegetative organs of coneflower have anti inflammatory, anti oxidant, anti fungus, anti bacterial, and anti viral effects and are used in curing coldness, it is also used for AIDS treatment [3]. Chemical components of coneflower lipophilic acid, water soluble polysaccharides, cafeic acid derivate including clorogenic acid and chicoric acid clorogenic acid is used in many food industries, cosmetic materials, drinks, teas, also pharmaceutical industries [4].

Chemical component of coneflower extract:
Parasimen, betacaryophylen, which previous studies showed that cultivations tuition, gathering time, and used organs changes essence components. All organs of plant have valuable matters like type [3].

Botanical characteristic of coneflower:
Echinaceac purpurea is a rennial bush from Asteraceae family. This plant is from North American originally and is known as purple cone flower. It has been used by American nations or various treatments including pain, cough, intestine problems, and snake biting [5].

Height of this plant is varied from 80-150 cm. Short rhizomes of plant produce much roots and the color of plant is dittere at from dark brown to white. The stem of plant is vertical and cylindrical which as slue, green or even red because of antocyanin stem has many branches with tough one of effective factors in growth and chemic compounds of plants is nutrition. Therefore, using natural fertilizers can increase medicinal index and yield.

Pharmacological activity of coneflower:

Echinacea purpurea have anti-bacterial, antiviral activity which is enforced via immune system integration. Therefore, it is effective on body's infection indirectly. Sometimes, it is used as primary our or complementary for ear infection, urine system been infections [6]. It seems that extract of Echinacea increases interofrone level [4]. Presence of alkamydes and cafeic acid in this plant cause strong anti-inflammation property [2]. Echinacea cause tumor necrosis via producing TNF & a nitric oxide (NO) [7]. Scar treatment in mice show that cafeic acid reduced inflammation response and treatment. These results show anti-inflammatory activity of Echinacea obviously [4]. It seems that in all people, oral and skin use of Echinacea is safe [5].

Antimicrobial properties of coneflower:
Researches show that coneflower essence is of biological active compounds which are antifungal and antibacterial. Studies show the gram$^-$ bacteria are less sensitive to antibacterial to external cell wall, but in gram$^+$ bacteria, direct contact of hydrophobic component of essence with two layers phospholipids lea to essence effect [8].

Researches show that coneflower essence has prohibiting effect on L.C. and C.A listeria *monocytogenes*, and *Candida albicans* microorganisms [8]. Another research showed that methanolic extract of this plant had effective antimicrobial effects on growth. Teimodrizadeh et al. reported that extant compounds in cone flower extract stimulate the growth of useful flora of intestine and reduced presence of bacteria like *E.coli*. Coneflower extract has been reported as growth stimulator and resistance strengthen to bacterial infection [9].According to researches, diabetic people and pregnant women should avoid this plant [2].

Effect of Coneflower on blood physiology
Studies of Modaresi et al [9] show that coneflower stimulates immune activities in health animals.

But they also announced that long time use of coneflower or high concentrations of this plant suppress immunity [10]. Studios show that high doses of coneflower in human can phagocytosis activity and decrease in white blood cells whereas lower doses increases it [11]. Bomer et al. (2006) reported that adding coneflower extract to broilers diet and fat pigs increased lymphocytes significantly [12]. Another research by Michima et al. (2004) in this category showed that lymphocytes numbers increased about 40% , studies show that coneflower extract has affecting on blood stem cells proliferation [6].

Oneal et at. (2002) reported that the extract of root (standardized by achinacusizde 4%) increase neutrophils phagocytosis in healthy horses and stimulated emigration of neutrophils from blood cycle to tissues and reduction of their amount in blood [13].

Injection of coneflower extract increases phagocytosis in tissues. Modaresi et al. reported that Ehinaceac extract increased red blood cells number in mice [14].

Effect of Coneflower on Scar treatment:
Echinacea have been used by American nation tribe to treat skin scars, skin infections, insects a snakes toxins. Chicoric acid and cafoil phenol an extant in the extract of *Echinacea purpurea* all part. These compounds protect collagen tissue against free oxygen radicals [9]. Bayer (1990) showed that chicoric acid us the most important coneflower derived material which controls the activity of tissue and bacterial hyaloronidase enzyme [11].

Controlling bacterial enzyme prohibits the extends of infection to tissue depth, increases filoroblast presence and causes renewal of by using Echinacea.

Antiviral effects of Coneflower:
Effective materials of this plant have antiviral effect and strengthen immune system in body [4]. Coneflower as an antioxidant and scar treating plant prohibits infection by its antibacterial anti-viral effects and prevents cancer cells growth [13]. It is also effective on respiratory diseases which are accompanies by viral infections. Herpes simplex type I (human) is the reason of various diseases in different organs, which are infectious and transformed to sensitive people by direct touch.

The extract of Iran's Coneflower has effect anti-viral control on this virus in laboratory can be used as a drug source for controlling in viral disease. The highest effect was obtained is 1:10 concentration [13].

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