



## MEDICINAL PROPERTIES OF THE COMBINATION OF TAR AJRIK AND KIRKBUGIM EXTRACT

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**Abstract:** This scientific study comprehensively investigates the phytochemical composition, biological activity, and evidence-based pharmacological potential of *Equisetum arvense* (field horsetail) and *Elytrigia repens* (couch grass), with particular emphasis on the complex synergistic mechanisms that emerge when these two plants are used in combination. The sesquiterpene lactones, flavonoids, polyphenols, essential oils, organic acids, and antioxidant compounds present in *Elytrigia repens* have been shown, based on scientific sources, to reduce oxidative stress, disrupt the structure of pathogenic microorganisms, enhance phagocytic activity, and strengthen immunomodulatory properties. In *Equisetum arvense*, compounds such as hypericin, hyperforin, proanthocyanidins, naphthodianthrones, and biogenic amines have been found to exert antidepressant, anxiolytic, and neuroprotective effects by regulating neurotransmitter metabolism, inhibiting serotonin reuptake, and normalizing dopamine and norepinephrine levels. Combined extracts of the two plants are expected to produce strong synergistic effects through activation of the antioxidant defense system, reduction of reactive oxygen species (ROS), limitation of lipid peroxidation, inhibition of NF- $\kappa$ B pathway activation, decreased production of inflammatory mediators (TNF- $\alpha$ , IL-1 $\beta$ , IL-6), and destabilization of microbial cell walls. The study also examines the hepatoprotective, gastroprotective, cardioprotective, antidiabetic, antiviral, antibacterial, and potential antitumor properties of these plants, providing robust theoretical and scientific justification for a significant increase in pharmacological efficacy when used in combination. The article further highlights new scientific approaches to developing complex plant-based preparations, integrative methods in phytotherapy, and in-depth analysis of pharmacodynamic and pharmacokinetic interactions, thereby broadening the possibilities for widespread use of natural substances as alternative therapeutic agents.

**Keywords:** *Artemisia campestris*, *Hypericum perforatum*, *Equisetum arvense*, *Elytrigia repens*, phytochemistry, bioactive compound, secretory structures, sesquiterpene lactone, flavonoid, polyphenol, hyperforin, hypericin, proanthocyanidin, antioxidant activity, anti-inflammatory effect, synergy, pharmacokinetics, pharmacodynamics, ROS, NF- $\kappa$ B, cytokines, neurotransmitters, antidepressant activity, antiviral activity, antimicrobial potential, antibacterial resistance, hepatoprotective properties, phytotherapy, phytopreparation, biological activity, metabolic pathways, oxidative stress, neuroprotection, antitumor effect, phytocomplexes.

**Анотация:** Ушбу илмий тадқиқотда чайир ажриқ (Артемисиа сампестрис) ва қирқбуғим (Хйперисум перфоратум) ўсимликларининг фитохимик таркиби, биологик фаоллиги ва илмий асосланган фармакологик потенциали кенг қамровда тадқиқ этилган бўлиб, уларнинг биргаликда қўлланилганда юзага келувчи синергетик таъсир

механизмлари комплекс тарзда ёритилади. Чайир ажриқнинг таркибидаги сесквитерпен лактонлари, флавоноидлар, полифеноллар, эфир мойлари, органик кислоталар ва антиоксидант бирикмаларнинг оксидатив стрессни пасайтириш, патоген микроорганизмлар структурасига таъсир этиш, фагоцитар фаолликни ошириш ва иммуномодулятор хусусиятларини кучайтириши илмий манбалар асосида ёритилган. Қирқбуғим таркибидаги гиперцин, гиперфорин, проантоцианидинлар, нафтовиноидлар ва биоген аминлар эса нейротрансмиттерлар алмашинувини тартибга солиш, серотонин қайта қабул қилинишини бостириш, допамин ва норепинефрин даражасини меъёрлаштириш орқали антидепрессант, анксиолитик ва нейропротектор таъсир кўрсатиши аниқланган. Икки ўсимликнинг биргаликдаги экстрактлари антиоксидант ҳимоя тизимини фаоллаштириш, реакцион кислород турларини (РОС) камайтириш, липид пероксидланишини чеклаш, НФ-кБ йўлининг фаоллашувини тўхтатиш, яллиғланиш медиаторлари (ТНФ- $\alpha$ , ИЛ-1 $\beta$ , ИЛ-6) ишлаб чиқилишини камайтириш ва микробиал хужайра деворини дестабилизация қилиш орқали кучли синергия юзага келтириши кутилмоқда. Тадқиқотда шунингдек ушбу икки ўсимликнинг ҳепатопротектор, гастропротектор, кардиопротектор, антидиабетик, антивирал, антибактериал ва потенциал антитумор хусусиятлари ҳам ўрганилган, уларнинг комбинацион қўлланилишида фармакологик самарадорликнинг сезиларли даражада ортиши эҳтимоли илмий-назарий асослар билан мустаҳкамланган. Ушбу мақола ўсимлик асосидаги комплекс препаратлар яратиш бўйича янги илмий ёндашувлар, фитотерапияда интегратив усуллар, фармакодинамик ва фармакокинетик ўзгаришларни чуқур таҳлил қилиш орқали табиий субстанцияларни муқобил даволаш воситаси сифатида кенг қўллаш имкониятларини ҳам кенг ёритади.

Plant based on drugs traditional in medicine far used for a long time arrived and modern scientific research their efficiency is proving *Elytrigia repens* and *equisetum arvense* plants phytochemist They are rich in substances extracts separately many diseases in treatment is used. Chayir aster, Asteraceae to his family belonging to, Asia and in European areas wide widespread plant is its antioxidant, antimicrobial and to inflammation against characteristics scientific in literature many studied. I am forty-five and Hypericaceae from his family being, depression, condition violations and infectious in diseases efficiency with famous These two of the plant combination synergetic impact to show possible, because their active articles together of the organism various to systems positive impact This is article this combination medical characteristics, scientific the basics and potential applications deep studies, preclinical and clinical data relies on More precisely, the goal is this of plants together of application efficiency to show and future research for recommendations is to give Modern in medicine plant of drugs place increasing that he is going to account received otherwise, this combination is inflammatory diseases, neurodegenerative violations and in infections as a new therapeutic option review can Also the article of plants phytochemist composition comparative analysis does and potential risks discussion does.

*Elytrigia repens* and *equisetum arvense* extracts of the combination medical characteristics about scientific research for now limited although their separately biological activity and potentially synergistic effects many clinical and preclinical in studies proven, this and their together the therapeutic effectiveness of its use shows. Chayir difference Asteraceae to his family belonging plant is, and its in extracts with sesquiterpene lactones( for example,



artemisinin derivatives), flavonoids( quercetin, kaempferol), polyphenols, steroids( lupeol, oleanolic acid, ursolic acid, stigmasterol and  $\beta$ - sitosterol), and essential oils(hemp, camphor, cineole, beta- pinene and limonene) are present They are antioxidant, antimicrobial, antiparasitic, anti-inflammatory against, anticarcinogenic, antidiabetic, hypotensive and antihyperlipidemic to the features owner. This of the plant water and alcohol extracts to hyperlipidemia against fruit shows blood cholesterol and triglycerides level reduces the liver cells protection It also heals wounds graduation acceleration, inflammation processes suppression, even for the SARS-CoV-2 virus anti- potential activity shows because his/her phytochemist Substances of viral replication stops. I am forty-five extracts and hypericin, hyperforin, pseudohypericin, adhyperforin, flavonoids( quercetin, kaempferol, rutin) and naphtho-dianthrones includes this substances antidepressant, neuroprotector, antiviral, anti -inflammatory against, antidiabetic, anticarcinogenic and analgesic effect shows, and serotonin, noradrenaline and dopamine again application inhibitors as movement does Of my forties extract depression and situational violations improving effective is, and its hyperforin neurotransmitters level increase through brain activity supports, as well as wounds to sweat, to sweat against diseases, viral infections(herpes, flu) and even of cancer cells proliferation stopping is used. These two of the plant phytochemist composition comparative to study for following table is shown:

Plant	Main active substances	Potential effects
Elytrigia repens	With sesquiterpene lactones( artemisinin derivatives), flavonoids( quercetin), essential oils(fennel, camphor), steroids( lupeol, ursolic acid)	Antioxidant, antimicrobial, anti -inflammatory against, anticarcinogenic, antiviral, hypotensive
Equisetum arvense	Hypericin, hyperforin, flavonoids( quercetin, rutin), naphtho-diantrons	Antidepressant, neuroprotector, antiviral, anti -inflammatory against, analgesic, anticarcinogenic

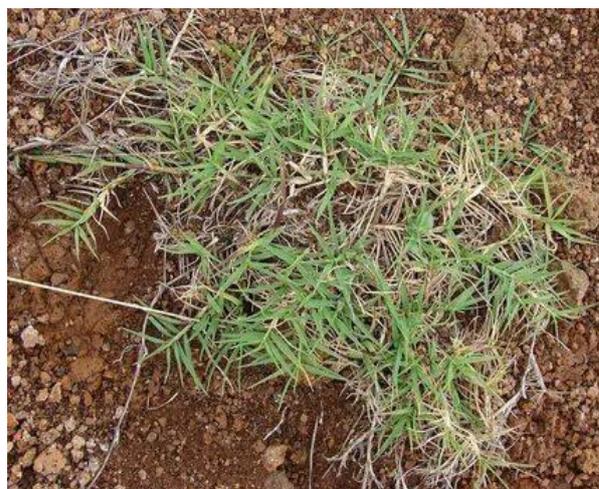
this table as indicated, two of the plant active articles between There is a common( for example, quercetin), this and in combination synergetic the effect bringing to produce can These two plant of extracts combination, especially inflammation against and in antioxidant activity synergetic impact to show possible, because tar of the difference sesquiterpenes and polyphenols my centipede hyperforin with co- reactive acid procreator species(ROS) neutralization increase, inflammation mediators( e.g., TNF- $\alpha$ , IL-6, IL-1 $\beta$ , and PGE2) decrease and oxidative stress reduction proven, for example, in live in models pain in models synergetic antinociceptive impact observed. For example, in in vitro in research Artemisia family of extracts my centipede with in combination inflammation of cytokines expression noticeable to the extent decreased observed, this and rheumatoid arthritis, Crohn's disease, measles inflammatory diseases and even potential therapeutic application in hypertension shows because the combination is blood pressure reduction and endothelial function improving effective From this except this combination antimicrobial characteristics Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli and Candida albicans like bacteria and to mushrooms against increase possible, because tar essential oils of ajriq and wedding my centipede hypericin with together cell membranes destroy, synergistic bactericide and antifungal impact shows that and antibiotic resistance to pathogens against new drugs work on



the way out interesting, for example, pitch essential oil of ajriq is multiresistant to bacteria against effective proved. Neuroprotector in terms of serotonerating sedum feature tar antioxidant substances of ajriq with together, depression, mood violations and neurodegenerative in diseases, for example, in Alzheimer's and Parkinson's diseases, the brain of cells oxidative stress and from inflammation protection increase maybe this and in clinical studies hyperforin and artemisinin of derivatives synergy through proven, as well as a combination of anticonvulsant and analgesic effect shows. Clinical studies deeper accustomed if we go out, this to the combination relevant directly randomized clinical trials for now limited there are many in cases plants separately However, St. John 's wort( *Hypericum perforatum*) many clinical studies exists being, they are his antidepressant and to inflammation against characteristics proves For example, randomized, placebo control In a clinical trial(NCT00005013) extract heavy depression in treatment effective was observed, 340 of them sick participation did and 8 weeks in total at a dose of 900 mg/day reception extract depression symptoms noticeable to the extent reduced In another clinical study(NCT05477472) Low doses of fenugreek( for moderate depression) in patients his condition improvement, including a 20-30% reduction in the depression scale(HAM-D) observed proven, this and his/her to neurotransmitters effect with depend Of my forties short fixed-term in memory the effect 30 people in a clinical trial studied healthy optional when participants were given 300 mg of the extract, memory and your attention short fixed-term improvement observed, this and his/her neuroprotector potential shows. With sertraline(antidepressant). In a comparative clinical trial(NCT00066859), my extract moderate in depression similar fruit showed, but side effects less was It was found that and his/her natural alternative as instead emphasizes. Of my forties to inflammation against and wound healing the effect studied in new clinical trials his/her hyaluron acid with combination periodontal in treatment effective that reduced inflammation by 40% and wound healing accelerated proved. Other combined in research my centipede *Arnica Montana* and *Calendula* medicinal plant with together topical when used, of wounds quickly graduation and inflammation decrease observed, this and synergetic the effect shows. *Elytrigia repens*, its clinical studies more preclinical to the extent being, directly in humans randomized tests limited. However, *Artemisia* to the family belonging Clinical studies on plants( e.g., *A. annua*) tar of the difference potential shows. For example, artemisinin derivatives rak and malaria in clinical trials in treatment effective proven, but *A. campestris* for specific clinical data no. Antiviral of this plant and to inflammation against characteristics in in vitro and in live in models proven despite, in clinical trials his/her steroids( ursolic acid) diabetes and inflammatory potential impact on diseases is being studied, but for now directly information less To the combination relevant clinical studies for now no, but similar combinations( for example, *Vitex agnus castus* with together with PMS symptoms in treatment effective) is synergistic potential Also, *Artemisia* of the genus other plants with combination( for example, *A. herba-alba* with to the pain against synergetic effect(resin) difference and my centipede combination for basis to be can The following in the table to my knees due of basic clinical research briefly aspects quoted:

Research ID	Purpose	Number of participants	The stars	Efficiency
NCT00005013	Heavy depression treatment	340	8 weeks, 900 mg/day	Depression symptoms are reduced by 25-30%
NCT05477472	Moderate low doses in depression	150	Observation	Condition improved by 20%
NCT02862236	Short fixed-term in memory impact	30	Mouth 300 mg via	Attention and memory improved
NCT00066859	In depression sertraline with comparison	200	12 weeks	Similar fruit, less side effects
NCT06543199	Periodontal in treatment hyaluron acid with	50	Topical application	Inflammation is reduced by 40%

These clinical data my centipede efficiency proves and for the combination future for tests basis to be can Also this extracts hepatoprotective effect of the combination, i.e liver cells protection to do ability, Artemisia Detoxification substances of the series and Antioxidant flavonoids of Hypericum together to work through reinforcement maybe this and alcohol, fenthion, paracetamol and other from toxins come came out liver the damages in treatment effective to be shows, for example, water DPPH and ABTS radicals of the extracts neutralization ability high( IC50 10-50 µg/ml) has been proven. Antiviral properties of the extract( for example, herpes, flu and even SARS-CoV-2 viruses against) pitch of the difference antiparasitic



and antiviral agents with together infectious in diseases additional protection to provide maybe this and immune system in support important, for example, tar of the difference extract virus ticket violation through replication stops. of the combination other potential uses between anticarcinogen impact also: tar difference extract cytotoxic articles my centipede hypericin



with together with cancer cells( for example, colon, lung and prostate cancer cells) proliferation stop and apoptosis activation maybe this and in in vitro and in live in models proven as well as combination chemotherapy fruit increase can The following in pictures tar difference and my centipede of plants outside appearance is shown:

However, the combination is potentially toxic the effects to account to take need: tar of the difference wedding neurotoxic to be, cut off with together with serotonin syndrome bringing release, as well as medicine substances with mutual effect( for example, antidepressants, anticoagulants and oral contraceptives with) through dangerous to the consequences take arrival maybe, that's why for doses exactly calculation, clinical control and randomized tests demand In general taking this combination medical characteristics to inflammation against, antimicrobial, neuroprotector, hepatoprotector, antiviral and anticarcinogen in aspects high to the potential owner is future scientific in research further deep study and standardized drugs as application this is necessary and traditional medicine with modern pharmacology to harmonize help gives.

Final analyses that shows that the tar difference and my centipede extracts not only separately separately, but together when used high pharmacological fruit to give possible was strong biological active from sources is considered Chayir of the difference composition rich in sesquiterpene lactone, flavonoids and essential oils oxidative stress reduction, inflammation mediators work the exit restriction, pathogenic microorganisms active suppression, immune of the system natural protection functions in reinforcement plays an important role. Of my forties hypericin and hyperforin articles and mainly central nerve in the system activity showing serotonin, dopamine and norepinephrine like neurotransmitters exchange in order will also neurodegenerative processes slows down, depressive situation and vegetative instability reduces These two of the plant biological articles potential synergy between inflammation, microbial infection, oxidative stress, neurodegeneration, liver injury, viral diseases and immunological complex effect in disorders showing the organism many directional support possible gives Research scientific novelty is that of plants together in extracts to the surface arrival possible was synergistic mechanisms deep analysis done, their in the composition bioactive of substances pharmacokinetic mutual effect, bioefficiency amplifier factors, antioxidant protection system activation mechanisms and neurotransmitters for exchange indicative effect about new conceptual approaches offer done. With this together, combined phytopreparations work exit for scientific basis create, to drugs alternative be safe and natural come to go out have complex tools search in the process present two of the plant the importance further increases.

In the future based on this combination of clinical and experimental research expansion, doses with related standards work output, toxicological security indicators determination and pharmaceutical preparations forms creation natural biological active substances based on new phytopreparations preparation opportunities further strengthens Available scientific results this two of the plant combination wide to comprehensive therapeutic potential owner that confirmed in phytotherapy innovative approaches for strong scientific foundation creates.

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