

Clinical Efficacy Of Homeopathic Remedy “Arnica Montana”: A Systematic Review

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ABSTRACT

Background: Homeopathic Arnica Montana is a safe and effective remedy for a variety of health issues especially post-traumatic swelling, pain and bruises. This remedy has been widely used since long for ecchymosis after injuries. Many studies have shown the clinical significance of Arnica Montana as a first-line remedy for traumatic complaints. Thus, the main purpose of this review was to evaluate the clinical efficacy of Homeopathic “Arnica Montana”

Methodology: A computerized, detailed literature search was carried to find clinical research articles. Pub Med, Google Scholar, Medline, Thieme-E-Journal, Science Direct, NCBI, and Sci-Hub search engines were searched to find the related articles. Human based full-length clinical research papers were identified while animal studies, pilot studies, review articles, opinion papers, and only abstracts were excluded. All double-blinded randomized placebo controlled prospective observational clinical research articles were added in it.

Results: Total 65 articles were studied extensively for this review. Irrelevant, duplicate, and unconcerned articles were removed. Total 25 articles were selected for this systematic review. Out of 25 clinical research papers, 18 clinical trials showed marked improvement either with Arnica Montana single or in combination with other homeopathic medicines. While seven clinical studies did not prove a satisfactory significance of Arnica Montana

Conclusion: This systematic review has shown the clinical significance of Homeopathic Arnica Montana as an effective remedy for injuries and bruises. However, in some studies, Arnica did not give beneficial results but these studies should be evaluated on a more scientific basis. More randomized placebo controlled clinical trials are required to prove clinical safety and efficacy of Arnica Montana.

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INTRODUCTION

Homeopathy is an alternative way of treatment developed by German Physician Dr. Samuel Hahnemann almost about 200 years ago (1, 2). This system became popular in 19th and 20th century and now it is practiced throughout the world (3). Homeopathy is still a debatable subject across the world even among Homeopaths and needs to be proved on a more scientific basis (4). The efficacy of Homeopathic remedies has always been a matter of controversy among people (5) but still, Homeopathic remedies are safe and effective therapeutically (6, 7) if used properly. Arnica Montana is an important part of Homeopathic Materia Medica and is

widely used as a homeopathic remedy (8).

Arnica Montana (also known as Leopard’s Bane and wolf’s bane) is a long lived herbaceous plant belongs to vast composite family consists of clearly visible yellow flowers similar to daisy (9, 10). This herb is native to the mountains of Siberia and Central Europe. The Arnica flowers usually blossom from June to August and cause sneezing, that is why Arnica is also called sneezewort (11). The flowers of Arnica Montana have been used for inflammatory diseases in traditional medicine for a long time (12). It is a perennial herb and its Mother Tincture is prepared from flowers, roots and leaves (13). As a herbal medicine, its extracts are prepared from flowers, which

are used in locally applied ointments, creams, gels, and compresses. The whole plant of Arnica is used in oral preparations for the treatment of swelling and throat inflammatory. In relieving muscle and joint pain it is also used widely (14).

Homeopathic remedy “Arnica Montana” has widely been used for traumatic problems and is considered the first-line remedy for injuries especially bruising injuries (15, 16). But this wonderful remedy covers the variety of illnesses therapeutically (17, 18). The German Commission E recognizes the topical use of arnica for injuries and sequels of accidents including hematoma, sprains, contusions and edema due to fractures, muscular soreness and joint problems, inflammation caused by insect bites and phlebitis (19). Arnica Montana can be used for different health issues including sprains, strains, and complaints after overuse of any organ, abscesses that do not mature, a tendency to tissue degeneration and thrombosis (20). It is a great muscle tonic which is tremendously beneficial even after birth to reduce the post-surgical pain and bruising (21).

Arnica has powerful anti-oxidant properties which help to heal the fibroblast cell damage due to oxidative stress in the body (22). Various studies showed that Arnica Montana helped to heal the post-operative lesions and wounds (23, 24). Thus, this review was carried to evaluate the efficacy of homeopathic remedy Arnica Montana.

METHODOLOGY

Comprehensive computerized literature was searched to find the articles related to the efficacy of Arnica Montana. Google Scholar, Pub Med, Medline, Science direct, Thieme-E- Journal, NCBI, and Sci-Hub was searched extensively. Only human based clinical trials were included in this article. Animal studies, articles with abstracts only, case reports, and pilot studies were also not included. Furthermore, research articles without any solid conclusions and opinion papers were also excluded. All randomized double blind placebo-controlled, prospective observational clinical research articles were

included in this review. We also exclude the articles, which were not related to our study

Total 65 research articles were searched through different databases. Total 62 articles remained after duplication removal. Two reviewers independently screened the articles. Overall, 37 articles were removed due to exclusion criteria. Total 25 full-length articles were included according to inclusion criteria as shown in figure 1.

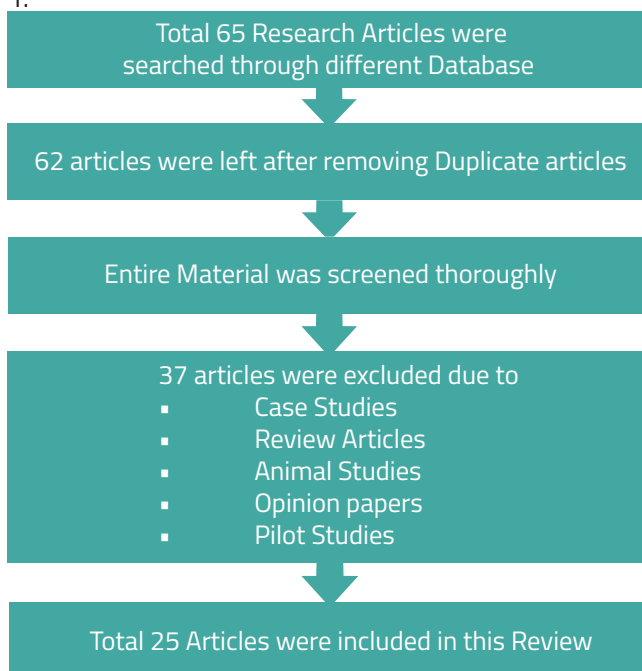


Figure 1: Overview of study

RESULTS

Total 65 articles were studied for the review, out of which 25 articles fulfilled the aforementioned criteria and were included in this review. Methodological details and outcomes of this study are summarized in Table 1. A prospective double-blinded single centered placebo controlled clinical trial was carried out by Adi Maisel Lotan to see the effects of Arnica Montana and Bellis Per for the prevention of Seroma after mastectomy. This study concluded significant improvement was seen in Seroma reduction in Group taking Arnica Montana & Bellis Per (25). Macedo conducted a double-blind randomized placebo controlled clinical trial in which Arnica Montana was given to a controlled group. The

Paper Ref	Drug	Sample Size	Condition Treated	Research Methodology	Major Findings
Lotan et al., 2020 (25)	Arnica Montana & Bellis per versus Placebo	55 Patients	Seroma Reduction following Mastectomy	Prospective double-blind randomized Placebo controlled trial	Arnica Montana & Bellis Per significantly reduced drain removal time
Macedo et al., 2005 (26)	<ul style="list-style-type: none"> ▪ Arnica Montana 6C ▪ Placebo 	32 Patients	Facial Edema after Tooth Extraction	Double-blind randomized placebo controlled clinical Trial	Edema was significantly reduced by Arnica Montana
Karow et al., 2008 (27)	<ul style="list-style-type: none"> ▪ Arnica Montana ▪ Diclofenac Sodium 	88 patients	Post-operative irritation after Hallux Valgus Surgery	Randomized double-blind parallel group study	Arnica can be used instead of Diclofenac to relieve post-operative wound healing and Irritation
Hart et al., 1997 (28)	<ul style="list-style-type: none"> ▪ Arnica 30C ▪ Placebo 	73 patients, (35 received Placebo, 38 received Arnica 30 C)	Post-operative recovery after Abdominal Hysterectomy	Double-blind randomized controlled study	No significant difference between two groups in post-operative recovery
Savage & Roe et al., 1977 (29)	<ul style="list-style-type: none"> ▪ Arnica 30C ▪ Placebo 	40 Patients, 20 were given Arnica 30 C, 20 were given Placebo	Acute Stroke Illness	A double-blind placebo controlled clinical Trial	No significant difference between two Groups

Table 1: Clinical efficacy of Arnica Montana

main findings of this study were that a significant reduction was seen in facial edema after molar tooth extraction (26).

Karow investigated in a double-blinded parallel group study, that Arnica Montana can be used in place of Diclofenac Group as it is equally effective in wound healing & post-operative irritation after foot surgery (27). On the other hand, Hart conducted a double-blinded randomized controlled clinical trial to check the post-operative wound healing after abdominal surgery. This study concluded that a significant difference was seen between the placebo group and Arnica Montana Group (28). Another study was performed by Savage & Roiein 1977 on acute stroke illness. This double-blind placebo controlled study also mentioned no significant

change in both groups (29).

Another clinical trial was designed as a prospective, randomized, reference-controlled, double blind, and four-arm parallel group study, performed in two study centers. This study was performed by Kucera to investigate the effects of pain relief combination spray in acute ankle distortion. This study mentioned marked improvement in pain by applying Arnica Mother Tincture and Hydroxyethyle salicylate combination spray (30). Widrigconducted a study on hand osteoarthritis. The study design was a randomized double blind comparative trial. The conclusion showed significant improvement in pain and hand functioning in both groups equally (31). Bohmer evaluated the swelling and bruising from sports injuries. This clinical trial was done in a controlled double

Paper Ref	Drug	Sample Size	Condition Treated	Research Methodology	Major Findings
Kučera et al., 2011 (30)	<ul style="list-style-type: none"> ▪ Arnica Tincture and Hydroxyethyl salicylate combination spray ▪ Arnica ▪ HES ▪ Placebo 	570 patients	Acute Ankle Joint Distortion	Prospective, Double-Blind four arm parallel group study	Group A including Arnica Tincture and Hydroxyethyl salicylate combination spray showed marked pain improvement in patients
Widriget et al., 2007 (31)	<ul style="list-style-type: none"> ▪ NSAID (Ibuprofen Gel) ▪ Arnica Montana Gel for topical application 	204 patients	Hand Osteoarthritis	Randomized Double-Blind comparative study	Pain intensity and Hand functioning was improved similarly in both treatment groups
Bohmer & Ambrus, 1989 (32)	<p>Traumeel ointment 1 contain</p> <ul style="list-style-type: none"> ▪ Aconite 1X ▪ Arnica 3 X ▪ Belladonna 1X ▪ Bellis per Q ▪ Chamomilla Q ▪ Calendula Q ▪ Echinacea Q ▪ Hamamelis Q ▪ Hepar Sulph 6X ▪ Hypericum 6 X ▪ Merc sol 6 X ▪ Millefoleum Q ▪ Symphytum 4X <p>Traumeel Ointment 2 contain</p> <ul style="list-style-type: none"> ▪ Arnica 3X ▪ Calendula Q ▪ Hamamelis Q ▪ Millefoleum ▪ Merc sol 6X ▪ Hypericum 6X <p>Traumeel Placebo Ointment</p>	102 patients	Sports injuries	Controlled Double-Blind study	Major findings were good to very good improvement in all study groups. No undesired effects were seen in any group
Tveiten et al., 1998 (33)	<ul style="list-style-type: none"> ▪ Arnica Montana ▪ placebo 	71 (46) patients	Muscle soreness after Marathon running	Randomized Double-Blind Study	Muscle soreness was markedly less in group taking Arnica
Erkan et al., 2018 (34)	<ul style="list-style-type: none"> ▪ Single Dose Arnica Montana 200 ▪ Placebo 	79 patients	Dental Surgeries including wisdom teeth extractions, implant placements, cystectomies, augmentation procedures and alveoplasties	Double-Blind Placebo controlled Study	No Marked effects than use of Placebo

Table 2: Clinical efficacy of Arnica Montana

blind fashion. In this study, Traumeel ointment of three types was applied including Arnica Montana. No undesired effects were seen and Good to very Good response in patients was observed (32). Tveiten conducted another Double-Blind Randomized trial in 1998. In this study degree of Muscle soreness was checked after Long distance Marathon Running. This study concluded that muscle soreness was markedly less in Group of Arnica (33). Erkan performed a double-blind placebo controlled trial in 2018. This study was designed to evaluate the effects of single dose Arnica Montana 200 before dental surgical procedures. According to this trial, Arnica Montana did not significantly prevent

post-operative swelling and pain when compared to the placebo (34).

On the other hand, Bendre conducted double-blind placebo controlled trial in the 1980s. In this study Arnica showed remarkable improvement in facial swelling after dental surgery (13). Robertson evaluated the results of post-tonsillectomy analgesia and marked improvement was seen in pain score in Arnica Patients Group. This was a randomized placebo controlled clinical trial on 190 patients (35). Another randomized double-blind placebo controlled study was conducted by Chaïet in 2016. This study revealed that Arnica montana seems to accelerate postoperative healing, with a quicker resolution of the

Paper Ref	Drug	Sample Size	Condition Treated	Research Methodology	Major Findings
Bendre et al., 1980 (13)	<ul style="list-style-type: none"> Combination of Arnica Montana 200 and Hypericum 200 Placebo 	200 Patients	Swelling and Pain after Dental surgery	Double-Blind placebo controlled Randomized study pattern	Combination of Arnica and Hypericum proved to be effective after dental surgery
Robertson et al., 2007 (35)	<ul style="list-style-type: none"> Arnica Montana 30C Placebo 	190 patients	Post Tonsillectomy analgesia	Randomized placebo Controlled Trial	Marked improvement in pain score in Arnica Patients Group
Chaïet & Marcus, 2016 (23)	<ul style="list-style-type: none"> Arnica Montana 5Ch Placebo 	74 Patients	Reduction of Ecchymosis in Rhinoplasty surgery	Randomized Placebo Controlled Double-Blinded Fashion	Arnica Montana seems to be effective in reducing ecchymosis after Rhinoplasty Surgery
Brinkhaus et al., 2006 (36)	<ul style="list-style-type: none"> Arnica Montana 30X Placebo Arnica Montana Cream 	227 Patients	Post-Operative Swelling & Pain after Arthroscopy, (ART) Artificial Knee joint Implantation (AKJ) and Cruciate Ligament	Three Single Centered Double-Blind Placebo Controlled Sequential Trials	Homeopathic Arnica was more effective in reducing post-operative swelling in CLR whereas there was no significant difference between either intervention in AKJ and ART
Simsek et al., 2016 (37)	<ul style="list-style-type: none"> Mucopolysaccharide Polysulfate ointment Placebo 	108 Patients	Reconstruction (CLR) Regression of Post-operative Edema & Ecchymosis in open Rhinoplasty surgery technique	Randomized, controlled, prospective clinical trial	Post-operative Edema & Ecchymosis was markedly reduced in Groups of Arnica Cream and Mucopolysaccharide Polysulfate cream than placebo group

Table 3: Clinical efficacy of Arnica Montana

extent and the intensity of ecchymosis after osteotomies in rhinoplasty surgery(23). Brinkhaus performed three sequential double blinded placebo controlled trials on the patients of Arthroscopy Knee Joint (ART), Artificial Knee joint Implantation (AKJ) and Cruciate Ligament reconstruction (CLR). He found that Arnica Montana showed beneficial effects than placebo in cases of CLR (36). A randomized, controlled, prospective clinical trial was conducted by Simsek. This study evaluated the efficacy of topical application of Arnica cream in the

patients of open rhinoplasty surgery. This study concluded that post-operative edema and ecchymosis was markedly reduced by the application of Arnica cream (37).

One prospective double blind, randomized, placebo-controlled clinical trial was performed by Cornu in 2010. This study was performed to evaluate the effects of a combination of Homeopathic Arnica and Bryonia on bleeding, inflammation and ischemia after aortic valve surgery. In this study, Arnica and bryonia

Paper Ref	Drug	Sample Size	Condition Treated	Research Methodology	Major Findings
Cornu et al., 2010 (38)	<ul style="list-style-type: none"> ▪ Combination of Homeopathic Arnica Montana 5CH and Bryonia 9 CH ▪ Placebo 	92 patients	Bleeding, Inflammation and ischemia after aortic valve surgery	prospective double blind, Randomized, placebo-controlled clinical trial	This combination did not show any benefit in avoiding bleeding, pain, inflammation and myocardial ischemia
Knuesel et al., 2002 (39)	Arnica Montana Gel containing 50 g of an arnica fresh plant tincture	79 patients	Mild to moderate Osteo-arthritis (OA) of the knee	An open multi-center clinical Trial	Arnica Gel proved to be safe & effective treatment in OA of Knee Median total scores on the Western Ontario and McMaster Osteoarthritis Index were significantly decreased in the intention-to-treat and per protocol populations (both P, 0.0001). Scores on the pain, stiffness, and function subscales were also significantly decreased
Leu et al., 2010 (40)	<ul style="list-style-type: none"> ▪ 5% vitamin K versus 1% vitamin K and 0.3% retinol ▪ or 5% vitamin K ▪ or 20% Arnica ▪ or white petrolatum (placebo) 	16 patients	comparative utility of topical formulations in hastening the resolution of Laser induced skin bruising	Double-Blinded Randomized controlled trial	There was significant difference in the change in the rater. Bruising score associated with the four treatments (ANOVA, P ¼ 0\$016). Pairwise comparisons indicated that the mean improvement associated with 20% arnica was greater than with white petrolatum (P ¼ 0\$003), and the improvement with arnica was greater than with the mixture of 1% vitamin K and 0\$3% retinol (P ¼ 0\$01). However, Improvement with Arnica was not greater than with 5% vitamin K cream.

Seeley et al., 2006 (41)	Arnica versus Placebo ▪ Traumeel Ointment	29 Patients 133 patients	Bruises after face-lifts (Rhytidectomy)	Prospective randomized double-blind placebo controlled study	Patients receiving Arnica had a smaller area of ecchymosis on post-operative days 1, 5, 7, and 10. These differences were statistically significant only on postoperative days 1 (P, 0.005) and 7 (P, 0.001)
Schneider et al., 2008 (42)	Each 100 g contains. ▪ Calendula officinalis \ 1X ▪ Hamamelis virginiana 1X ▪ Arnica Montana 3X ▪ Aconitum napellus 3X ▪ Belladonna 3X ▪ Bellis perennis 1X ▪ Chamomilla 1X ▪ Echinacea angustifolia 1X ▪ Echinacea purpurea 1X ▪ Millefolium 1X ▪ Hepar sulphuris calcareum 8X ▪ Mercurius solubilis 8X ▪ Symphytum officinale 4X ▪ Hypericum perforatum 6X Conventional Medicines	(69 Traumeel patients and 64 conventional patients)	Various muscular-skeletal injuries	Multi-center, prospective, comparative observational cohort study	Complete resolution of pain and inflammatory symptoms at the end of therapy were observed in 59.4% of patients in the Traumeel group and in 57.8% of patients in the conventional medicine group

Table 4: Clinical efficacy of Arnica Montana

effectiveness was not seen in combination on bleeding, inflammation, pain or myocardial ischaemia (38). According to one open multi-center clinical trial, Arnica Gel proved to be effective and safe in mild to moderate osteoarthritis of the knee. This study was conducted by Knueselin 2002 (39). Another double-blinded randomized controlled trial was carried out by Leu et al., in 2010. This trial was performed to evaluate the efficacy of Arnica Gel in comparison with other medications. Results showed that topical Arnica Gel is effective after post laser bruises (40). Seeley investigated the effects of

Arnica versus placebo in prospective randomized double-blind placebo controlled study. It was concluded that bruises after Rhytidectomy were significantly less on POD 1 & 7 as compared to placebo (41). Another multicenter prospective, observational cohort study was carried out by Schneider. This study was concluded that Traumeel ointment (including Arnica & other Homeopathic preparations) proved beneficial in musculo-skeletal injuries (42). Oberbaum investigated beneficial effects of Arnica Montana and Bellis Per in Post-partum Bleeding (43).

Kaziro found in Comparative placebo controlled study, that Flagyl is more effective than Arnica in controlling pain and edema post-surgically (8). Whereas, Kotlus concluded in placebo controlled trial that, Arnica did not prove to be effective in ecchymosis after blepharoplasty (44). Another randomized comparative study was performed by Totonchi in 2007. This study found Arnica montana and corticosteroids equally effective in reducing edema (45). Stevinson concluded in one randomized placebo controlled trial, that Homeopathic Arnica has no effects more than placebo in reducing pain & edema (46).

DISCUSSIONS

Over the past 25 years, the use of Homeopathic medicines has increased worldwide in terms of prescriptions by a physician as well as recommendations

by common people. Homeopathy is recognized by the World Health Organization (WHO) as 200 years old healing method, which is widely used in all WHO regions (47). Homeopathic medicines prescribed by trained and expert physicians are safe and effective without any adverse effects (7). In particular, Arnica Montana is an important part of Homeopathic Pharmacopoea and is been used for trauma associated with pain and swelling. This review article summarizes the clinical evidence regarding the efficacy of Arnica montana in case of post-traumatic pain, swelling and bruises. For this purpose, 65 full-length articles were thoroughly studied. Considering the inclusion criteria, 25 articles were selected in this review Case and animal studies, pilot studies and opinion papers were no included. Effects of

Paper Ref	Drug	Sample Size	Condition Treated	Research Methodology	Major Findings
Oberbaum et al., 2005 (43)	Arnica Montana 30 C Bellis Per 30 C Versus Placebo	40 Patients	Post-partum Blood loss	A Randomized Double-Blind Placebo controlled study	Treatment with Arnica Montana and Bellis per may reduce Blood Loss as compared to Placebo
Kaziro, 1984 (8)	▪ METRONIDAZOLE (FLAGYL) ▪ Arnica Montana ▪ Placebo	118 patients	Post-surgical complications, pain and edema	A comparative Placebo-controlled clinical Trial	Metronidazole was more effective in pain control than Arnica. Arnica was effective than placebo
Kotlus et al., 2010 (44)	▪ Arnica Montana 1-M And 12 C ▪ Placebo	30 patients	Ecchymosis after upper Blepharoplasty	Placebo controlled Double-Blind study	No statistically significant difference between two groups in resolution of ecchymosis
Totonchi et al., 2007 (45)	▪ intravenous dexamethasone intraoperative ▪ Arnica Montana	48 Patients	Post-Rhinoplasty ecchymosis and Edema	A Randomized controlled comparative study	Both Arnica and Corticosteroids may be effective in reducing edema during the early post-operative period
Stevinson et al., 2003 (46)	▪ Analgesic Medication ▪ Arnica 6 C or 30 C ▪ Placebo	62 patients	Post-operative Bruising, pain and swelling in Hand surgery	Randomized placebo controlled trial	This trial did not prove any efficacy of Homeopathic Arnica over placebo in reducing pain & swelling after elective Hand surgery

Table 5: Clinical efficacy of Arnica Montana

both topical and oral administration of Arnica Montana was evaluated in this review. Overall, Arnica Montana proved to have clinical benefits, some of which are comparable with anti-inflammatory conventional medicines like Ibuprofen, corticosteroids and diclofenac (27,31,45).

One Prospective Double-Blind Randomized Placebo-controlled trial was performed on 55 patients. This study concluded the clinical benefits of Arnica Montana and Bellis per over the placebo to reduce Seroma formation after mastectomy (25). As this treatment had no side effects and was inexpensive so it can be used frequently in patients undergoing mastectomy (25).

Overall, four studies were conducted to evaluate post-surgical swelling and pain after dental surgery. Two studies proved the efficacy of Arnica, whereas two studies did not prove arnica beneficial. A study performed on 32 patients, proved Arnica a valuable remedy for pain after dental surgery(26). The second study was performed on 200 patients.

This study mentioned the good effects of Arnica and Hypericum in dental surgeries (13). The third study was done on 79 patients in a double-blind placebo controlled fashion. This study was carried out on the patients of dental surgeries including wisdom teeth extractions, implant placements, cystectomies, augmentation procedures, and alveoloplasties. This study concluded no marked effects of Arnica Montana over the placebo (34) But, there were certain drawbacks in this clinical trial. One of the most important was that only a single dose of Arnica 200 was given in this case which did not prove beneficial. We know that in therapeutic cases repetition of medicine could be proved beneficial.

The fourth study was performed on 118 patients of edema and pain after dental procedures. Metronidazole was more effective than Arnica in this case, while Arnica proved to be beneficial than placebo (8). Topical application of arnica Montana in the form of Traumeel ointment was applied on 69 patients while 64 patients

were treated with conventional medicines. Overall 59.4% of patients in the Traumeel group and 57.8% of patients in the conventional medicine group showed improvement (42). Another study on 108 patients with sports injuries was carried out by Traumeel ointment and mentioned good to very good improvement(32). As far as topical application of arnica is concerned, Arnica always proved beneficial in local application. Combination spray of Arnica Tincture and Hydroxyethyle salicylate (570 Patients) (30), Arnica Gel in hand Osteo-arthritis (31), Arnica Montana cream in open Rhinoplasty surgery (37), Arnica cream composed of fresh Arnica tincture for OA of the knee (39) and 20 % Arnica (40) all proved to be effective and pain relieving as a topical treatment. Though in the cases of Acute stroke illness (29), Abdominal hysterectomy (28) and Blepharoplasty (44) Arnica seemed to prove no significant difference in improvement than placebo. All these studies were double-blind placebo controlled trials performed on 40, 73, and 30 patients respectively.

One randomized double-blind placebo controlled study was performed on 71 Marathon runners. Effects of muscular soreness were evaluated after Arnica Montana, which showed marked improvement when given in 30 D potency immediately after the run. But Arnica did not have any effect on cell damage (33). In the case of post-tonsillectomy pain (190 patients), Arnica group showed a larger drop in pain scores from day 1 to day 14 (35). In post-Rhinoplasty ecchymosis and edema, Arnica and corticosteroids both proved to be efficacious within 2 days after surgery (45).

In another case of Rhinoplasty surgery, Arnica Montana was administered. Data showed a statistically significant difference in intensity, with a 36.3% decrease in the Arnica Montana group on postoperative days 9/10(23). Cutaneous problems after Rhinoplasty, including edema and ecchymosis, were effectively improved by topical application of Arnica cream (37). In one study trial on post-partum blood loss, Arnica Montana and Bellis per proved to be useful compared to placebo. At 3rd day postpartum, mean Hb levels remained same (with slight

variation) after treatment with homeopathic remedies (12.7 versus 12.4) as compared to a significant decrease in Hb levels in the placebo group (12.7 versus 11.6; $p < 0.05$) (43).

Cornu et al., in 2010 investigated the effects of Arnica and Bryonia in aortic valve surgery. He did not get satisfactory results to control blood loss. The difference observed was a reduction of about 20% (156.2 ml), but the study was not sufficiently strong for such a difference (38). Seeley et al., in 2006 evaluated that Arnica Montana group have a smaller area of ecchymosis on postoperative days 1, 5, 7, and 10 as compared to placebo in Post laser bruises of face-lifts. This study was conducted on 29 patients (41). On the other hand, a case of blepharoplasty reported no significant decrease in the area of ecchymosis after administering Arnica in 1-M/ 12 C potency. This potency administration is again a bit confusing. The dosage regimen for Arnica Montana consisted of a single 1-M capsule (500 mg substrate) taken orally 3 times for the operative day, followed by a 12-C capsule (500 mg substrate) taken 3 times daily for the next 3 days (high dose followed by low dose) (44).

Stevenson et al., also found no efficacy of Arnica over placebo in elective hand surgery performed on 79 patients (46). A study performed on 227 patients showed the efficacy of Arnica Montana in case of post-operative swelling in CLR (cruciate ligament reconstruction). In this study, Arnica seems to be a cost effective alternating treatment arm to control post-operative pain and swelling (36). A case of Hallux valgus surgery on 88 patients proved efficacy of Arnica equivalent to diclofenac in controlling post-surgical wound irritation (27).

al characteristic of COVID -19. Except for 4 questions, overall, a very good response was noted.

CONCLUSION

This review article concluded that Homeopathic Arnica

Montana (both oral and topical) is an effective remedy in reducing pain, swelling, and ecchymosis in post-traumatic cases. Arnica as a single remedy or in the form of combination with other Homeopathic remedies showed good results. After reviewing all the research articles, we concluded that few studies failed to prove the efficacy of homeopathic remedy Arnica in future, methodologically strong studies should be conducted. More randomized placebo controlled studies should be conducted to evaluate the efficacy of Arnica Montana in cases other than post-traumatic issues.

REFERENCES

1. Ernst E. A systematic review of systematic reviews of homeopathy. *British journal of clinical pharmacology*. 2002;54(6):577-82.
2. Smolle J. Homeopathy in dermatology. *Dermatologic therapy*. 2003;16(2):93-7.
3. Fisher P. What is homeopathy? An introduction. *Frontiers in Bioscience (elite edition)*. 2012;4:1669-82.
4. Ernst E. The truth about homeopathy. *Br J Clin Pharmacol*. 2008;65(2):163-4.
5. Ernst E, Pittler MH. Efficacy of homeopathic Arnica: a systematic review of placebo-controlled clinical trials. *Archives of Surgery*. 1998;133(11):1187-90.
6. Lütcke R, Rutten A. The conclusions on the effectiveness of homeopathy highly depend on the set of analyzed trials. *Journal of clinical Epidemiology*. 2008;61(12):1197-204.
7. Dantas F, Rampes H. Do homeopathic medicines provoke adverse effects? A systematic review. *British Homeopathic Journal*. 2000;89(S 01):S35-S8.
8. Kaziro G. Metronidazole (Flagyl) and Arnica Montana in the prevention of post-surgical complications, a comparative placebo controlled clinical trial. *British Journal of Oral and Maxillofacial Surgery*. 1984;22(1):42-9.

9. Gibson D. Arnica, a study. *British Homeopathic Journal*. 1972;61(03):167-70.
10. Maurice T, Colling G, Muller S, Matthies D. Habitat characteristics, stage structure and reproduction of colline and montane populations of the threatened species *Arnica montana*. *Plant Ecology*. 2012;213(5):831-42.
11. Lawrence WT, Committee tPSEFD. Arnica. *Plastic and Reconstructive Surgery*. 2003;112(4):1164-6.
12. Merfort I. Arnica: new insights on the molecular mode of action of a traditional medicinal plant. *Forschende Komplementarmedizin und klassische Naturheilkunde= Research in complementary and natural classical medicine*. 2003;10:45-8.
13. Bendre V, Dharmadhikart S. Arnica montana and Hypericum in dental practice. 1980.
14. Barkey E, Kaszkin-Bettag M. A Homeopathic Arnica patch for the Relief of Cellulitis-derived pain and Numbness in the Hand. *Global advances in health and medicine*. 2012;1(2):18-20.
15. Lüdtke R, Hacke D. On the effectiveness of the homeopathic remedy *Arnica montana*. *Wiener Medizinische Wochenschrift*. 2005;155(21-22):482-90.
16. Campbell A. Two pilot controlled trials of Arnica montana. *British Homeopathic Journal*. 1976;65(03):154-8.
17. Willuhn G. Arnica Flowers: Pharmacology, Toxicology, and Analysis of the Sesquiterpene Lactones—Their Main Active Substances. ACS Publications; 1998.
18. Hutsol L, Hutsol N. A Trait to the Portrait of Arnica montana. *Homœopathic Links*. 2005;18(03):137-8.
19. Gel AA. Endless Knot Ayurvedic & Herbal Health Medicine.
20. Boericke W. Pocket manual of homeopathic materia medica: Homeopathic; 1903.
21. Course MH, Course DT, Clarke MJ. Herbs for use during Pregnancy, Labour, Birthing and the New Mother and Baby Months.
22. Craciunescu O, Constantin D, Gaspar A, Toma L, Utoiu E, Moldovan L. Evaluation of antioxidant and cytoprotective activities of *Arnica montana* L. and *Artemisia absinthium* L. ethanolic extracts. *Chemistry Central Journal*. 2012;6(1):97.
23. Chalet SR, Marcus BC. Perioperative Arnica montana for reduction of ecchymosis in rhinoplasty surgery. *Annals of plastic surgery*. 2016;76(5):477-82.
24. Iannitti T, Morales-Medina JC, Bellavite P, Rottigni V, Palmieri B. Effectiveness and safety of Arnica montana in post-surgical setting, pain and inflammation. *American journal of therapeutics*. 2016;23(1):e184-e97.
25. Lotan AM, Gronovich Y, Lysy I, Binenboym R, Eizenman N, Stuchiner B, et al. Arnica montana and Bellis perennis for seroma reduction following mastectomy and immediate breast reconstruction: randomized, double-blind, placebo-controlled trial. *European Journal of Plastic Surgery*. 2020:1-10.
26. Macedo SB, Carvalho J, Ferreira L, dos Santos-Pinto R. Effect of Arnica montana 6 cH on edema, mouth opening and pain in patients submitted to extraction of impacted third molars. *Ärztzeitschrift Für Naturheilverfahren*. 2005;46:381-7.
27. Karow J-H, Abt H-P, Fröhling M, Ackermann H. Efficacy of Arnica montana D4 for healing of wounds after Hallux valgus surgery compared to diclofenac. *The Journal of Alternative and Complementary Medicine*. 2008;14(1):17-25.
28. Hart O, Mullee MA, Lewith G, Miller J. Double-blind, placebo-controlled, randomized clinical trial of homeopathic arnica C30 for pain and infection after total abdominal hysterectomy. *Journal of the Royal Society of Medicine*. 1997;90(2):73-8.
29. Savage R, Roe P. A double blind trial to assess the

- benefit of Arnica montana in acute stroke illness. *British Homeopathic Journal*. 1977;66(04):207-20.
30. Kučera M, Kolar P, Barna M, Kučera A, Hladíková M. Arnica/Hydroxyethyl salicylate combination spray for ankle distortion: a four-arm randomised double-blind study. *Pain Res Treat*. 2011;2011:365625-.
31. Widrig R, Suter A, Saller R, Melzer J. Choosing between NSAID and arnica for topical treatment of hand osteoarthritis in a randomised, double-blind study. *Rheumatology international*. 2007;27(6):585.
32. Bohmer D, Ambrus P. Treatment of sports injuries with Traumeel ointment. *Biol Ther*. 1989;10:290-300.
33. Tveiten D, Brusset S, Borchgrevink C, Norseth J. Effects of the homeopathic remedy Arnica D30 on marathon runners: A randomized, double-blind study during the 1995 Oslo Marathon. *Complementary Therapies in Medicine*. 1998;6(2):71-4.
34. Erkan E, Parpar K, Develi T, Gündoğar M, Gürler G. The efficacy of homeopathic Arnica montana 200 CH on dental surgical treatments: a double-blind, placebo-controlled study. *The European Research Journal*. 2018;5(5):793-9.
35. Robertson A, Suryanarayanan R, Banerjee A. Homeopathic Arnica montana for post-tonsillectomy analgesia: a randomised placebo control trial. *Homeopathy*. 2007;96(01):17-21.
36. Brinkhaus B, Wilkens J, Lüdtkke R, Hunger J, Witt C, Willich S. Homeopathic arnica therapy in patients receiving knee surgery: results of three randomised double-blind trials. *Complementary therapies in medicine*. 2006;14(4):237-46.
37. Simsek G, Sari E, Kilic R, Bayar Muluk N. Topical application of arnica and mucopolysaccharide polysulfate attenuates periorbital edema and ecchymosis in open rhinoplasty: a randomized controlled clinical study. *Plastic and reconstructive surgery*. 2016;137(3):530e-5e.
38. Cornu C, Joseph P, Gaillard S, Bauer C, Vedrinne C, Bissery A, et al. No effect of a homeopathic combination of Arnica montana and Bryonia alba on bleeding, inflammation, and ischaemia after aortic valve surgery. *Br J Clin Pharmacol*. 2010;69(2):136-42.
39. Knuesel O, Weber M, Suter A. Arnica montana gel in osteoarthritis of the knee: an open, multicenter clinical trial. *Advances in therapy*. 2002;19(5):209.
40. Leu S, Havey J, White L, Martin N, Yoo SS, Rademaker AW, et al. Accelerated resolution of laser-induced bruising with topical 20% arnica: a rater-blinded randomized controlled trial. *British Journal of Dermatology*. 2010;163(3):557-63.
41. Seeley BM, Denton AB, Ahn MS, Maas CS. Effect of homeopathic Arnica montana on bruising in face-lifts: results of a randomized, double-blind, placebo-controlled clinical trial. *Archives of facial plastic surgery*. 2006;8(1):54-9.
42. Schneider C, Schneider B, Hanisch J, van Haselen R. The role of a homeopathic preparation compared with conventional therapy in the treatment of injuries: an observational cohort study. *Complementary therapies in medicine*. 2008;16(1):22-7.
43. Oberbaum M, Galoyan N, Lerner-Geva L, Singer SR, Grisaru S, Shashar D, et al. The effect of the homeopathic remedies Arnica montana and Bellis perennis on mild postpartum bleeding—a randomized, double-blind, placebo-controlled study—preliminary results. *Complementary Therapies in Medicine*. 2005;13(2):87-90.
44. Kotlus BS, Heringer DM, Dryden RM. Evaluation of homeopathic Arnica montana for ecchymosis after upper blepharoplasty: a placebo-controlled, randomized, double-blind study. *Ophthalmic Plastic & Reconstructive Surgery*. 2010;26(6):395-7.

45. Totonchi A, Guyuron B. A randomized, controlled comparison between arnica and steroids in the management of postrhinoplasty ecchymosis and edema. *Plastic and reconstructive surgery*. 2007;120(1):271-4.

46. Stevinson C, Devaraj V, Fountain-Barber A, Hawkins S, Ernst E. Homeopathic arnica for prevention of pain and bruising: randomized placebo-controlled trial in hand surgery. *Journal of the Royal Society of Medicine*. 2003;96(2):60-5.

47. Organization WH. Safety issues in the preparation of homeopathic medicines: Geneva: World Health Organization; 2009.