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The Immediate Effectiveness of *Justicia Gendarussa* (Kraduk Kai Dam) with Ginger Extract Spray on Improving Cervical Range of Motion in Patients with Upper Back Muscle Pain

Pongmada Damapong¹, Peerada Damapong^{2,*},

Yaowana Wongthaijaroen³ and Wararat Boriboon⁴

^{1,2,3}Department of Public Health and Health Promotion, College of Allied Health Sciences, Suan Sunandha Rajabhat University, Samut Songkhram, Thailand

E-Mail: ¹pongmada.da@ssru.ac.th, ²peerada.da@ssru.ac.th, ³yaowana.wo@ssru.ac.th

*Corresponding author

Abstract.

To determine the Immediate Effectiveness of *Justicia Gendarussa* (Kraduk Kai Dam) with Ginger Extract Spray on Improving Cervical Range of Motion in Patients with Upper Back Muscle Pain. The volunteers applied the *Justicia gendarussa* (Kraduk Kai Dam) with ginger extract spray to the bilateral shoulder and cervical muscles three times daily—morning, noon, and evening—and gently massaged the affected muscle areas for approximately 3–5 minutes. When comparing the measurements before the application of the *Kraduk Kai Dam*-ginger spray with those obtained immediately after its application, the findings indicated that the values at each time point decreased significantly ($p < 0.05$). Additionally, cervical flexion showed a statistically significant reduction ($p < 0.05$).

Keywords: Immediate, Effectiveness, *Justicia Gendarussa*, Cervical Range of Motion, Upper Back Muscle Pain

1. Introduction

Upper thoracic muscle pain frequently coexists with neck and shoulder discomfort and is predominantly attributed to inappropriate or sustained postures, such as prolonged computer use or extended periods of looking down at a mobile device. These habitual postures are recognized contributors to office syndrome. Upper back pain may also be associated with various conditions, including muscular dysfunction, cervical intervertebral disc pathology, or disorders of the cervical spinal joints, all of which can produce concurrent neck and upper back symptoms. Continuous engagement of the same muscle groups for several hours can lead to persistent muscle contraction required for postural maintenance, thereby reducing overall body mobility. This reduction may promote the formation of inflammatory myofascial trigger points, resulting in localized pain as well as referred discomfort in other body regions. If left untreated, the symptoms may progressively worsen and potentially develop into chronic pain. (Praram 9 Hospital, 2022).

Pain-relief herbal sprays are commonly used as part of therapeutic approaches for alleviating upper back muscle pain. However, conventional analgesic medications are often prescribed more frequently, such as diclofenac, piroxicam, ibuprofen, as well as muscle relaxants including diazepam, baclofen, and tolperisone. Long-term use of these medications may cause notable adverse effects on the body, including gastrointestinal irritation, kidney and liver impairment, palpitations, drowsiness, dizziness, nausea, and vomiting. These side effects are typically associated with non-steroidal anti-inflammatory drugs (NSAIDs) and muscle relaxants (Payathai Hospital, 2020).

When selecting a pain-relief spray, it is important to choose a product that is both effective and beneficial for reducing or relieving upper back muscle pain. These formulations are derived from traditional Thai wisdom, utilizing the medicinal properties of native herbal ingredients. Additional herbs are often incorporated to further enhance the product's efficacy in relieving musculoskeletal discomfort.

In this study, the researcher utilized two medicinal plants—*Kraduk Kai Dam* (*Litsea glutinosa*) and ginger—as the primary herbal ingredients for developing a pain-relief spray. Both herbs possess well-recognized therapeutic properties and are effective in alleviating pain, reducing muscle stiffness, and minimizing inflammation. The combination of *Kraduk Kai Dam* and ginger serves as an appropriate formulation for producing a herbal pain-relief spray, free from hazardous chemical additives. All raw materials used in the product were organically cultivated by local residents in Samut Songkhram Province, without the use of chemical agents. The herbs were extracted using 95% ethanol, and prior to their application in the research, an allergy test for the *Kraduk Kai Dam*-ginger herbal spray was conducted. Furthermore, the aroma of the product contributes to stress reduction and relaxation through its therapeutic properties. (Sudsawart et al. 2025)

Kraduk Kai Dam is a plant species commonly found in Samut Songkhram Province, naturally growing along riverbanks, streams, and forested areas. It is distributed across all regions of Thailand and thrives in loamy soil with moderate moisture conditions (Department of Agriculture, 2022). Ginger is also a widely used traditional herb known for its numerous medicinal properties and high accessibility. Previous research has demonstrated that both *Kraduk Kai Dam* and ginger exhibit significant analgesic and anti-inflammatory effects, particularly in relieving muscle and joint pain. (Chaiphongpachara, T. 2020)

Based on this evidence, the researcher aimed to develop and evaluate the effectiveness of a *Kraduk Kai Dam*-ginger herbal spray for relieving upper back muscle pain. This product offers a practical alternative that makes use of readily available local herbal resources in Samut Songkhram Province, while also supporting community livelihoods by creating opportunities for income generation among local residents.

2. Research Objective

To determine the Immediate Effectiveness of *Justicia Gendarussa* (*Kraduk Kai Dam*) with Ginger Extract Spray on Improving Cervical Range of Motion in Patients with Upper Back Muscle Pain

3. Material and methods

3.1 Design

This study was conducted at the Department of Health Promoting Hospital in Samut Songkhram Province, Thailand. It involved a Quasi Experimental Research design. The Immediate Effectiveness of *Justicia Gendarussa* (Kraduk Kai Dam) with Ginger Extract Spray on Improving Cervical Range of Motion in Patients with Upper Back Muscle Pain was tested using a before-after treatment approach. The research received approval from the Human Research Ethics Committee of Suan Sunandha Rajabhat University (COA.1-005/2024).

3.2 Study Sample

The sample consisted of 10 individuals experiencing upper back muscle pain with a pain intensity score of 4 or higher.

Inclusion Criteria

1. Male or female participants aged 18 years and above.
2. Individuals with upper back muscle pain rated at level 4 or above, or at least moderate pain.
3. Individuals who consented to participate in the study.

Exclusion Criteria

1. Individuals with known allergies to any herbal ingredients used in the *Kraduk Kai Dam*-ginger herbal spray.
2. Individuals with contagious skin diseases or other serious communicable diseases.

3.3 Intervention

The volunteers applied the *Justicia gendarussa* (Kraduk Kai Dam) with ginger extract spray to the bilateral shoulder and cervical muscles three times daily—morning, noon, and evening—and gently massaged the affected muscle areas for approximately 3–5 minutes.

3.4 Measurement instruments

The Visual Analogue Scale (VAS) is a pain assessment method developed from the pain measurement scale introduced by Huskisson, Jone, and Scott (1976). It evaluates pain intensity using a 10-centimeter horizontal line, with the far-left end representing “no pain” and the far-right end representing “the worst possible pain.” Participants are asked to mark an “X” on the line at the point that best corresponds to the severity of their pain at that moment. The assessor then measures the distance in centimeters from the “no pain” anchor to the participant’s mark, and this value is interpreted as the pain score. Pain scores range from 0 to 10.

This method is recognized for its sensitivity and accuracy, and it is simple to use for evaluating pain levels. However, its limitations include difficulty in use among older adults or individuals with visual impairments.

The Cervical Range of Motion (CROM) device was used to measure neck movements, including flexion, extension, left lateral flexion, and right lateral flexion.

3.5 Statistical analysis

The demographic data of the volunteers were analyzed to describe their characteristics using mean and standard deviation. Furthermore, a paired t-test was employed to compare the pre- and post-intervention mean values. Repeated Measures ANOVA was also conducted to evaluate the effects of the treatment, with the level of statistical significance set at 0.95 ($p < 0.05$).

3. Results

When comparing the measurements before the application of the *Kraduk Kai Dam*-ginger spray with those obtained immediately after its application, the findings indicated that the values Cervical Range of Motion (CROM) at each time point Increase significantly ($p < 0.05$).

Table 1 Visual Analogue Scale and the CROM before and after the administration of the *Justicia gendarussa* (Kraduk Kai Dam) with ginger extract spray

Outcome	<i>Justicia gendarussa</i> (Kraduk Kai Dam) with ginger extract spray			
	Pre-test (mean±SD)	Post-test 2 (mean±SD)	Difference (95%)	P-value
Visual Analogue Scale (VAS; centimeter)	6.80±0.78	4.11±0.99	2.70±0.94	0.001*
Cervical range of motion (centimeter)				
Flexion	60.2±21.4	62.4±22.2	0.76±0.70	0.007*
Extension	55.9±19.6	60.6±17.6	-1.53±1.27	0.004*
Left lateral flexion	45.1±17.0	49.2±14.8	1.75±1.11	0.001*
Right lateral flexion	40.2±14.2	44.9±18.7	1.61±0.80	0.001*

5. Discussion

The findings indicate that the use of *Justicia Gendarussa* (Kraduk Kai Dam) with Ginger Extract Spray on Improving Cervical Range of Motion in Patients with Upper Back Muscle Pain

6. Conclusion

It can be concluded from the results of the present study that the *Justicia Gendarussa* (Kraduk Kai Dam) with Ginger Extract Spray can be effective in treating Upper Back Muscle Pain patients. Further research should be conducted on a larger sample with a control. Additionally,

follow-ups should be carried out in order to monitor the effects of this therapy in the long-run. Finally, it is advisable to conduct research along this line that examines other dependent variables than and the CROM.

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