Muscle Relaxant Activity of Aqueous Extract of Acacia Arabica Leaves on Wistar Rats

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Abstract: A muscle relaxant is a drug that influences skeletal muscle function and decreases muscle tone. It can be used to relieve symptoms along with muscle spasms, pain, and hyperreflexia. The existing take look is achieved to know the skeletal muscle relaxant activity of the aqueous leaves extract of Acacia Arabica via checking out the effects of the extract on Wistar rats using the rota-rod apparatus model. Experiments have been executed on male rats and the animals had been grouped as control, trendy, and check. The extract (aqueous) includes Tannin, polyphenolic compounds, flavonoids—kaempferol, glucoside, iso-quercitrin and leucoeyanidin, galactose; arabinose, rhamnose, and aldobiouronic acids, additionally arabinobioses. The extract turned into administered orally at a dose of 200 mg/kg. Diazepam in a dose of four mg/kg (S.C.) changed into used as a well-known. Ordinary saline is run as a manager. Aqueous extract on the dosing stage of two hundred mg/kg body weight confirmed skeletal muscle relaxant pastime. On the bases of the paintings completed, we will finish that Acacia Arabica may be used to increase herbal drugs in opposition to the relaxant pastime.

Keywords: Acacia Arabica, Muscle relaxant, Rota-rod, Flavonoids, Diazepam

Introduction:
In current years, there has been an increasing activity internationally in the use of herbal plant life as fitness dietary supplements or medicines. Systematic research on the effect of specific medicinal herbs on the immune machine is designed to achieve proof-based scientific information on the ideal use of traditional medicinal herbs. Vachella nilotica, greater generally referred to as Acacia nilotica, and using the vernacular names of gum arabic tree, babul, thorn mimosa, Egyptian acacia, or thorny acacia, is a flowering tree in the own family Fabaceae. It’s far local to Africa, the Middle East, and the Indian subcontinent. It is also considered a ‘weed of country-wide importance’ and an invasive species of difficulty in Australia, as well as a noxious weed by the federal government of us. Acacia nilotica (ARABICA) or Vachella nilotica is a tree 5–20 m excessive with a dense spheric crown, stems, and branches typically dark to black colored, fissured bark, grey-pinkish decrease, exuding a reddish low satisfactory gum. The tree has thin, instantly, mild, grey spines in axillary pairs, usually in 3 to 12 pairs, 5 to 7.5 cm (3 in) lengthy in young timber, mature trees normally without thorns. The leaves are bipinnate, with 3–6 pairs of pinnulae and 10–30 pairs of leaflets every, tomentose, rachis with a gland at the lowest of the ultimate pair of pinnulae. Vegetation in globulous heads 1.2–1.5 cm in diameter of shiny golden-yellow coloration, set up either axillary or whorly on peduncles 2–3 cm long placed on the cease of the branches. Pods are strongly constricted, furry, white-grey, thick, and softly tomentose. Its seeds wide variety of approximately 8000/kg. The prevailing work is to evaluate the skeletal muscle relaxant interest of the aqueous extract of leaves of Acacia Arabica.

Materials and Methods:
Collection and authentication of plant material: The leaves of the plant Acacia Arabica have been gathered from the department of Botany, ANU University, and Guntur.

Extraction: The leaves of Acacia Arabica have been shade dried and powdered, the powder of the Leaves initial was defeated with water (60-80°C) the extract changed into filtered using the usage of Whatman paper (#1) after which concentrated in a vacuum and dried at 45°C for water removal and the extract was stored in a sterile bottle below refrigeration circumstance of about 2-8°C.

Phytochemical screening: Qualitative checks for the presence of plant secondary metabolites together with alkaloids, flavonoids, proteins, saponins, and glycosides were carried out on the leaf powdered using general approaches.

Animals used: Adult Albino rats (Wistar Strain) of either sex weighing 100-150 g have been used. The animals maintained the proper dietary and environmental circumstances throughout the experiment. The animals were housed in polypropylene cages with paddy house bedding beneath preferred laboratory situations for an acclimatization period of 7 days previous to acting on the experiment. The animals had been fed commercially to be had rat pelleted diet. Water changed into allowed below strict hygienic conditions.

Acute toxicity studies: Acute toxicity research has been done following OECD tenet no. 425 to look at the acute toxic results and to decide the minimal lethal doses of the drug extract. Male Wistar rats 150-200 g changed into used for the take a look at. The aqueous extract changed into administered orally to in a single day fasted animals at doses of 200 mg/kg, 500 mg/kg, 750 mg/kg, a thousand mg/kg, and 2000 mg/kg of frame weight. After administration of the extracts, the animals had been located continuously for the first hours, for any poisonous manifestation. Thereafter, observations were made at everyday periods for forty-eight hours. Further, the animals have been under investigation as much as a period of two weeks.
Rats have been divided into three groups including five animals each. Group I served as manager which received 1% everyday saline. Animals of group II the obtained standard drug Diazepam at a dose of (4 mg/kg, i.p.). Group III obtained the aqueous extract of *Acacia Arabica* orally at a dose of 200 mg/kg. Animals last on Rota-Rod (22 rpm) for 2 min or extra in low successive trials after the administration of taking a look at the material or manipulating the automobile the same check of 30 min for two hr. The fall-off time from the rotating rod turned into a state. The difference in the fall-off time from the rotating rod between the control and dealt with rats became taken as an index of muscle relaxation.

**Statistical analysis**

All the values have been statistically analysed using one-way analysis of variance (ANOVA) accompanied with the aid of the Dunnett more than one evaluation take a look at. Information from distilled water-treated animals had been used as the control and information from diazepam-dealt with animals was used as popular values. All values are expressed as imply ± S.E.M. consequences appeared as extensive at \( P \leq 0.05 \).

**Results**

**Initial phytochemical studies**
The preliminary phytochemical screening of aqueous extract shows the presence of glycosides, alkaloids, flavonoids, saponins, and proteins.

**Acute toxicity research**

Acute toxicity research had been achieved to evaluate the drug’s toxicity and to decide the minimum deadly dose of the drug extracts, using Wistar rats. It was discovered that aqueous extracts as much as a dose of 1000 mg/kg frame weight, did no longer display any poisonous manifestations or death. It shows toxicity at a dose of 2000 mg/kg. So in line with OECD tip no.425, the healing dose is 1/10\(^{th}\) of the toxic dose the therapeutic dose was calculated which became two hundred mg kg.

**Skeletal muscle relaxant activity (motor coordination):**
The skeletal muscle relaxant impact of aqueous extract of *Acacia Arabica* leaves has been shown in Fig 1. treatment with extract at a dose of 2 hundred mg/kg and Diazepam at a dose of four mg/kg decreased fall off and sliding time and boom climbing time (motor coordination). The result acquired from each popular and extract-handled company was compared with the management group. A fantastically big *\( P < 0.05 \) and ** \( P < 0.001 \) reductions within the motor coordination were determined inside the take a look at the drug at 30 min of the period.

![Graph](image)

**Fig. 1:** impact of *Acacia Arabica* on muscle relaxant interest (rota-rod equipment model). Statistics are way ± S.E.M. of six animals

**DISCUSSION:**

The objective of this look became to investigate in-depth the skeletal muscle relaxant pastime of the aqueous extract of *Acacia Arabica* leaves. The present effects showed that the aqueous extract of *Acacia Arabica* leaves own a vast skeletal muscle relaxant activity in experimental rats. At a dose of two hundred mg/kg, it confirmed a pretty significant skeletal muscle relaxant activity at 60 min of the period. Preliminary phytochemical screening exhibits the presence of glycosides, flavonoids, alkaloids, and proteins inside the plant extract. Consequently, they found skeletal muscle relaxant pastime can be attributed to these compounds. Similarly, research is in progress to isolate the energetic constituents liable for this activity, for the reason that the pharmacological profile of the existing research of the aqueous extract of *Acacia Arabica* was much like that of benzodiazepines, it is also feasible that they might have interaction with benzodiazepine receptor located adjacent to the GABA receptor.

**CONCLUSION:**

The effects of this have a look at assisting in the traditional use of *Acacia Arabica* as an anticonvulsant drug. However, similarly, research is vital to locate the exact mechanism of the skeletal muscle relaxant effect and to isolate the energetic compound accountable for this pharmacological activity.

**REFERENCES:**


OECD Guidelines 425 for the testing of chemicals adopted 23.03.2006. Acute oral toxicity – up and down procedure (UDP)


