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INVESTIGATION PHYTOCONSTITUENT FROM THE LEGUME OF CADABA FRUTICOSE L. DRUCE FROM WARDHA DISTRICT (MS) INDIA

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ABSTRACT: The Cadaba fruticosa (L.) Druce is a wild plant belonging to the Family of Capparaceae. The plant from the past has many plants have medicinally important properties. Some of them are Antimicrobial, anti-cancer, Antidiabetic, Antioxidant Activity Ant Inflammatory Activity. The present study focused on the preliminary phytochemical analysis of legumes or fruits. The result reveals the presence of bioactive constituents comprising alkaloids, flavonoids, phenolic, tannins, glycosides, steroids, and saponin in different solvents. The phytoconstituent which are observed have a medicinal value that helps mankind.

Key words: - Cadaba fruticosa, Medicinal properties, phytochemistry, Wardha, Maharashtra.

INTRODUCTION :

Medicinal plants are a valuable source of treatment for various human illnesses. With growing awareness of the health risks and toxicity associated with the indiscriminate use of synthetic medications and antibiotics, worldwide interest in the use of plants and plant-based drugs has resurfaced. Secondary metabolites of plants serve as defense mechanisms against predation by many microorganisms, insects, and herbivores (Cowan, 1999).

The Cadaba fruticosa L. an Ancient Medicinal plant. It is an unarmed shrub having 5m Hight, having Capparaceae Family. Trifoliolate leaves. Axillary, solitary, racemose flowers and having 4 sepals. Fleshy, long, cylindrical fruits also known as legumes which are red and yellow. Fruits are generally used for worm infections and so on.

MATERIAL AND METHODS:

The plant material was collected from the wild stage, on the roadside of Wardha district. (M.S). The plant was identified taxonomically by a local taxonomist and with help of the flora of Marathwada [Naik, 1998], the flora of Maharashtra (Singh & Kartikeyan, 2000), and flora of Akola district (Kamble & Pradhan, 1988), the flora of Nagpur District (Ugemuge 1986).

EXTRACTION METHODS :

The plant material fruits/ legumes were washed thoroughly and dried in shade. The shade dried material is then powered and the powder is used for photochemical analysis. The powder was then subjected to soxhlet extraction with different solvents (petroleum ether, benzene, acetone, chloroform, methanol, and water) according to their increasing polarity. The final extract of each solvent was used to analyze for the presence of different phytochemical constituents [Harborne, 1992; Harborne, 1998; Kokate et al., 2005]. The method employed for the quantification of various phytochemicals is described below.

Qualitative phytochemical analysis:

1. Test for proteins Millon's test

The crude extract when mixed with 2ml of Millon's reagent, white precipitate appeared which turned red upon gentle heating that confirmed the presence of protein.

2. Ninhydrin test

The crude extract when boiled with 2ml of 0.2% solution of Ninhydrin, a violet colour appeared suggesting the presence of amino acids and proteins.

3. Test for carbohydrates Fehling's test

An equal volume of Fehling A and Fehling B reagents were mixed and 2ml of it was added to the crude extract and gently boiled. A brick-red precipitate appeared at the bottom of the test tube indicated the presence of reducing sugars.

4.Benedict's test

The crude extract when mixed with 2ml of Benedict's reagent and boiled, a reddish-brown precipitate formed which indicated the presence of the carbohydrates.

5. Molisch's test

The crude extract was mixed with 2ml of Molisch's reagent and the mixture was shaken properly. After that, 2ml of concentrated H2SO4 was poured carefully along the side of the test tube. The appearance of a violet ring at the interphase indicated the presence of carbohydrates.

6. Iodine test

The crude extract was mixed with 2ml of iodine solution. A dark blue or purple coloration indicated the presence of the carbohydrate.

7. Test for phenols and tannins

The crude extract was mixed with 2ml of 2% solution of FeCl3. A blue-green or black coloration indicated the presence of phenols and tannins

8. Test for flavonoids Shinoda test

The crude extract was mixed with a few fragments of magnesium ribbon and concentrated HCl was added dropwise. The pink scarlet colour appeared after a few minutes which indicated the presence of flavonoids. Alkaline reagent test Crude extract was mixed with 2ml of 2% solution of NaOH. An intense yellow colour was formed which turned colourless on the addition of a few drops of diluted acid which indicated the presence of flavonoids.

9. Test for saponins

The crude extract was mixed with 5ml of distilled water in a test tube and it was shaken vigorously. The formation of stable foam was taken as an indication of the presence of saponins.

10. Test for glycosides Liebermann's test

The crude extract was mixed with 2ml of chloroform and 2ml of acetic acid. The mixture was cooled in ice. Carefully concentrated H2SO4 was added. A colour change from violet to blue to green indicated the presence of a steroidal nucleus, i.e., the glycone portion of the glycoside.

11. Salkowski's test

The crude extract was mixed with 2ml of chloroform. Then 2ml of concentrated H2SO4 was added carefully and shaken gently. A reddish-brown colour indicated the presence of a steroidal ring, i.e., the glycone portion of the glycoside.

12. Keller-kilani test

The crude extract was mixed with 2ml of glacial acetic acid containing 1-2 drops of 2% solution of FeCl3. The mixture was then poured into another test tube containing 2ml of concentrated H2SO4. A brown ring at the interphase indicated the presence of cardiac glycosides.

13. Test for steroid

The crude extract was mixed with 2ml of chloroform and concentrated H2SO4 was added sidewise. A red colour produced in the lower chloroform layer indicated the presence of steroids. Another test was performed by mixing

the crude extract with 2ml of chloroform. Then 2ml of each of concentrated H2SO4 and acetic acid was poured into the mixture. The development of a greenish coloration indicated the presence of steroids.

14. Test for terpenoids

The crude extract was dissolved in 2ml of chloroform and evaporated to dryness. To this, 2ml of concentrated H2SO4 was added and heated for about 2 minutes. A grayish colour indicated the presence of terpenoids.

15. Test for alkaloids

The crude extract was mixed with 2ml of 1% HCl and heated gently. Mayer's And Wagner's reagents were then added to the mixture. Turbidity of the resulting precipitate was taken as evidence for the presence of alkaloids.

RESULTS:

Table 1. Phytochemical extraction of legume of *Cadabra fruticose L. Druce*

S.N	Compound	Test	Sovant		
			Aqueous	Ethanol	Methanol
			Legume	Legume	Legume
1	Carbohydrate	Fehling	+	+	+
		Benedict's	+	-	-
2	Proteins	Biuret	+	+	-
		Lead acetate	+	-	-
3	Alkaloids	Mayer's			
		Dragendroff's	+	+	+
4	Tannins	Lead acetate	+	+	-
5	Flavonoid	Lead acetate	+	-	+
6	Quinone		+	+	+
7	Saponins		-	-	-
8	Cardiac glycoside		+	+	+
9	Steroid		-	-	+
10	Terpenoids		_	-	-

DISCUSSION AND CONCLUSIONS:

The extraction of the plant materials powder was done by using different solvents viz; petroleum ether, chloroform, acetone, methanol, and water. The preliminary phytochemical analysis showed the presence of alkaloids, glycosides, phenolic, Flavonoids, tannins, steroids, glycoside, and saponins. However, all these chemicals were not extractable in one solvent. Table 1 shows different types of phytoconstituent which have medicinal values. Several workers investigated the preliminary phytochemistry of medicinal plants [Krishnaiah et al., 2009; Koche et al., 2010], (Jadhao et al, 2013), and so on. Phytochemical analysis Cadaba fructose L. different parts were carried out but fruits/legumes were untouchable. Therefore, the present study will be helpful for further research in the field of pharmaceuticals.

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Figure 1 Cadaba fructosa L. showing Legume