



## **Awareness of Effect of Ashwagandha (*Withania somnifera*) on Blood Sugar Levels - A Survey**

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### **Authors' contributions**

Author JP have designed the study and done the statistical analysis, Author BSA have collected the literature articles and drafted the manuscript and the author GD have done the final approval of the manuscript.

### **Article Information**

DOI: 10.9734/JPRI/2020/v32i1530632

#### Editor(s):

(1) Dr. Ameen, Oloduwo Mubarak, University of Ilorin, Nigeria.

(2) Rafik Karaman, Al-Quds University, Palestine.

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Complete Peer review History: <http://www.sdiarticle4.com/review-history/59684>

**Original Research Article**

**Received 03 June 2020**

**Accepted 09 August 2020**

**Published 24 August 2020**

### **ABSTRACT**

**Introduction:** Ashwagandha (*Withania somnifera*) is a spice utilized in Ayurveda, the conventional medication of India. Its root has a horsey smell (in Sanskrit, ashva signifies "horse" and gandha signifies "smell") and is said to present the quality and virility of a pony. Different pieces of the plant are utilized, yet the most well-known in supplements is a concentrate of its underlying foundations.

**Aim:** aim of this study is to compare and assess the awareness among people on the effects of ashwagandha on blood sugar levels.

**Materials and Methods:** A well structured questionnaire containing 10 questions was circulated among Indian population. The questionnaire has covered basic demographic data such as age, gender, weight, blood pressure and about the awareness of effects of ashwagandha on blood sugar levels.

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**Conclusion:** From the above outcomes, it might be presumed that the *Withania somnifera* root extract can reduce blood sugar levels. It's mindfulness among individuals must be expanded.

*Keywords: Ashwagandha; Withania somnifera; stress; blood sugar level.*

## 1. INTRODUCTION

Ashwagandha (*Withania somnifera*) is a spice utilized in Ayurveda, the customary medication of India [1]. Its root has a horsey smell (in Sanskrit, ashva signifies "horse" and gandha signifies "smell") and is said to give the quality and virility of a horse [2]. Different pieces of the plant are utilized, yet the most well-known in supplements is a concentrate of its roots [3]. It is an individual from the Solanaceae family [4]. It is normally known as Indian Ginseng or Winter Cherry. Ashwagandha is alluded to as an "illustrious spice" in view of its diverse rejuvenative impacts on the human body. It is a multipurpose spice that follows up on different frameworks of the human body: the neurological framework, the safe framework, the vitality creation framework, the endocrine framework and the conceptive system [5,6].

Various investigations propose that it has anxiolytic (hostile to tension) impacts; examines are for the most part steady of an outstanding impact of ashwagandha for this reason, and it appears to diminish cortisol levels. In any case, more exploration is required before we can have a lot of trust in it or know the ideal portion. Ashwagandha helps in expanding insulin emission and improves insulin affectability in muscle cells, in this manner being very gainful for diabetics.

As per an investigation named 'India Fit Report 2019' distributed by GOQii, a main preventive medicinal services organization, diabetes has expanded by 40 percent from 2017 to 2018 among individuals matured under 45 years. Ashwagandha may likewise have the option to diminish sleep deprivation, exhaustion, and the side effects of melancholy, however it hasn't been very much explored for these purposes. It might build power yield in undeveloped subjects during obstruction practice and anaerobic running, yet this perception depends on a limited quantity of examination and more is needed. It might prompt little decreases in blood glucose, circulatory strain, and LDL-cholesterol, while marginally expanding HDL-cholesterol. Also, it might unobtrusively build testosterone and sperm

quality in fruitless men. Our recent research portfolio slides numerous articles in reputed journals [1–5]. Based on this experience we planned to pursue study on effects of ashwagandha on blood sugar levels.

Although a lot of studies have been done on ashwagandha and its health effects, there are not many studies that proves the positive effects of ashwagandha on blood sugar levels, therefore the main aim of this study is to compare and assess the awareness among people on the effects of ashwagandha on blood sugar levels.

## 2. MATERIALS AND METHODS

The data were collected from the rural and urban people who belong to the South Indian population. A questionnaire comprising 10 questions was framed and was circulated, through an online platform named "google forms". The link was shared to a limited population of 100. The participants were first informed about the need for the survey and the responses were accepted from the respondents. The advantage of the study is that it can be circulated easily at free of cost and the questions in the questionnaire were set in an easily understandable manner. Non probability convenient sampling method was used in order to reduce the error caused due to bias. Some of the other methods to avoid bias include selecting participants randomly and avoiding irrelevant questions. A questionnaire was prepared after reviews and amendments were made to improve clarity and eliminate unambiguous responses. The participants were selected based on the place they reside and various attributes like sex, age and height were not taken into consideration. The survey instrument was a structured questionnaire with closed ended questions. Only completely filled forms were included in the study, then the obtained responses were verified by reviewers and collected data was reworded. The entered data were analysed using SPSS statistics 19. Descriptive statistics was performed to calculate frequencies of categorical variables.

**2.1 Structured Questionnaire**

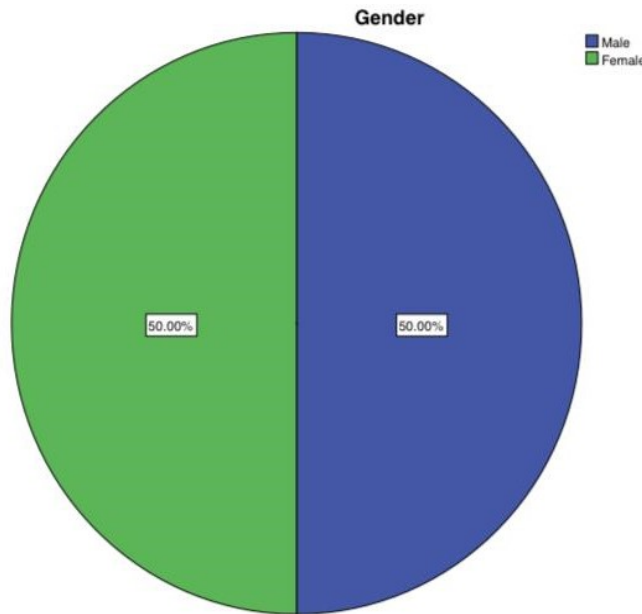
1. Gender  
Male Female
2. Age  
15-25 years 26-35 years 36 and above
3. What is ashwagandha?  
A medicinal herb. A chemical
4. Ashwagandha reduces?  
Stress. Infertility. Both of the above
5. Scientific name of Ashwagandha?  
*Withania somnifera* *Mangifera indica*.
6. Does ashwagandha reduce stress?  
Yes. No. Maybe
7. The name ashwagandha is derived from?  
Latin Sanskrit Greek
8. Root of ashwagandha has

Therapeutic effects. Physiological effects.

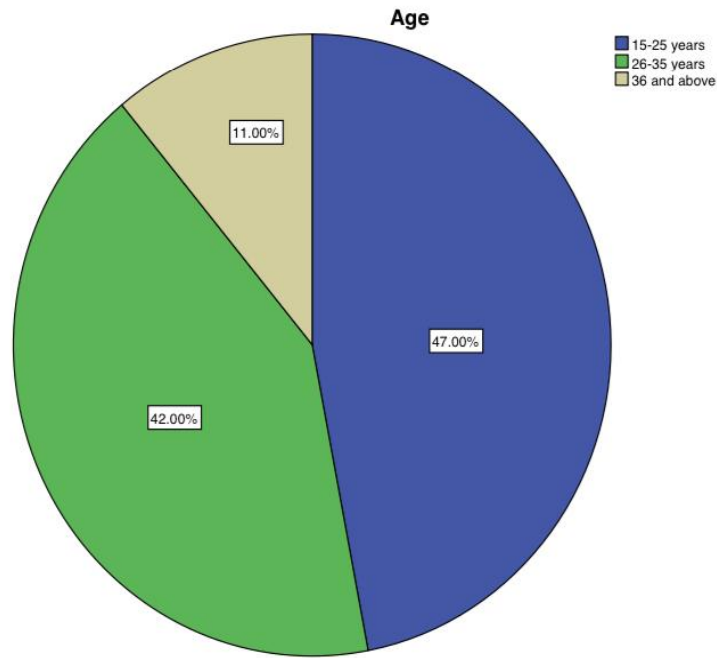
9. Ashwagandha does?  
Fight tumour. Increase Bp. Increase anxiety.
10. Insulin sensitivity occurs in?  
Muscle cells. Nerve cells

**3. RESULTS AND DISCUSSION**

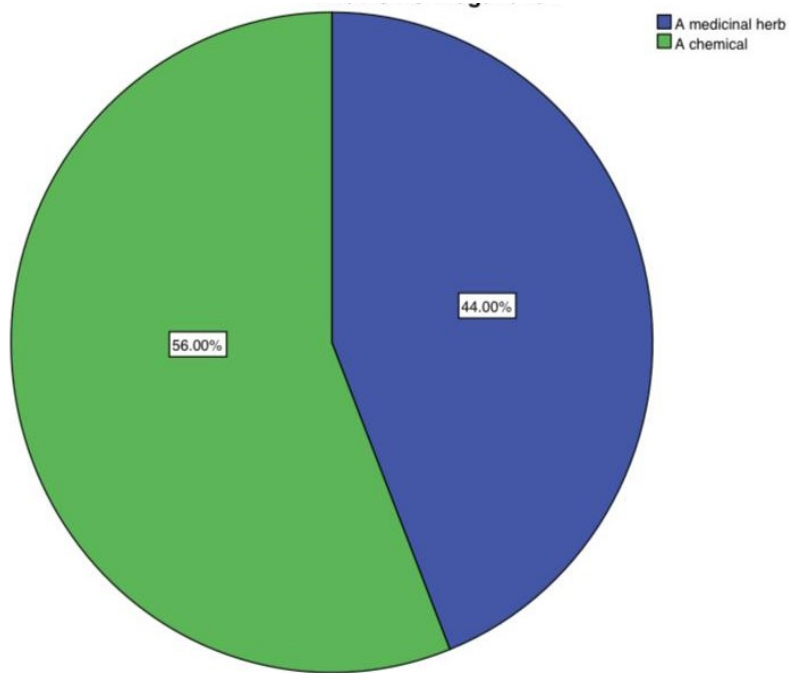
A total of 50% male(blue) and 50% females (green) participated in this survey (Fig. 1). 47% of the population belonged to the age group of 15-25 years(blue), 42% of population belonged to the age group of 26-35 years(green), 11% belonged to the age group above 36 (beige) (Fig. 2). 44% of the population said ashwagandha is a medicinal herb(blue) and 56% of the population said it was a chemical (green) (Fig. 3). What does Ashwagandha reduce was the question asked and 43% of the population said Stress(blue), 43% of the population said infertility (green) and 14% said both of the above(beige) (Fig. 4). In Fig. 5 the question was about the scientific name of ashwagandha, for which 58% said *Withania somnifera* (blue) and 42% said *Mangifera indica* (green).



**Fig. 1. The pie chart represents the percentage distribution of gender of the participants. 50% responded male (blue) and 50% responded females (green)**



**Fig. 2.** The pie chart represents the percentage distribution of age of the participants. 47% respondents are aged 15-25 years (blue) and 42% respondents are aged 26-35 years (green) and 11% of respondents are aged 36 years and above (beige)



**Fig. 3.** The pie chart represents the percentage distribution of what is ashwagandha. 44% responded medicinal herb (blue) and 56% responded chemical (green)

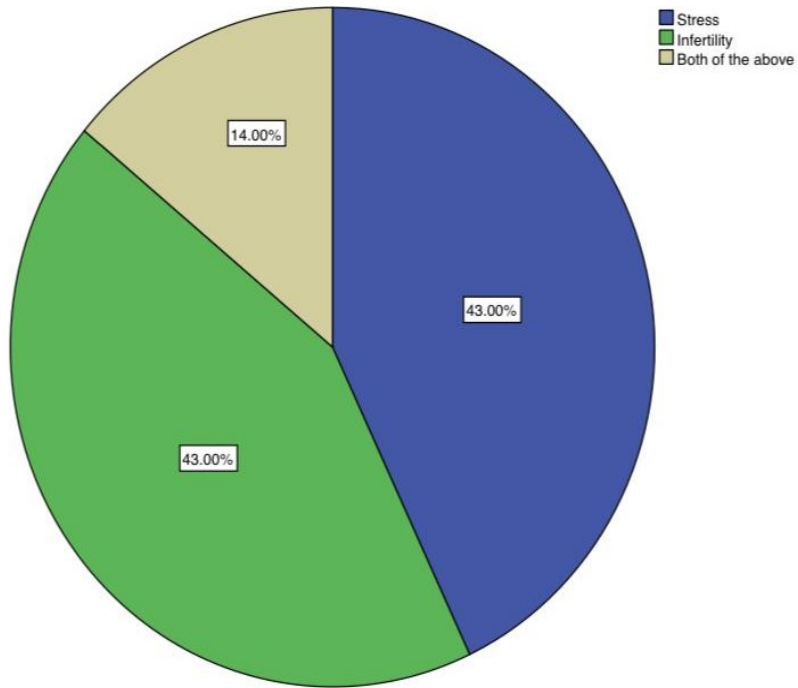


Fig. 4. The pie chart represents the percentage distribution of The factor ashwagandha reduces. 43% responded to stress (blue), 43% responded to infertility (green) and 14% responded to both of the above (beige)

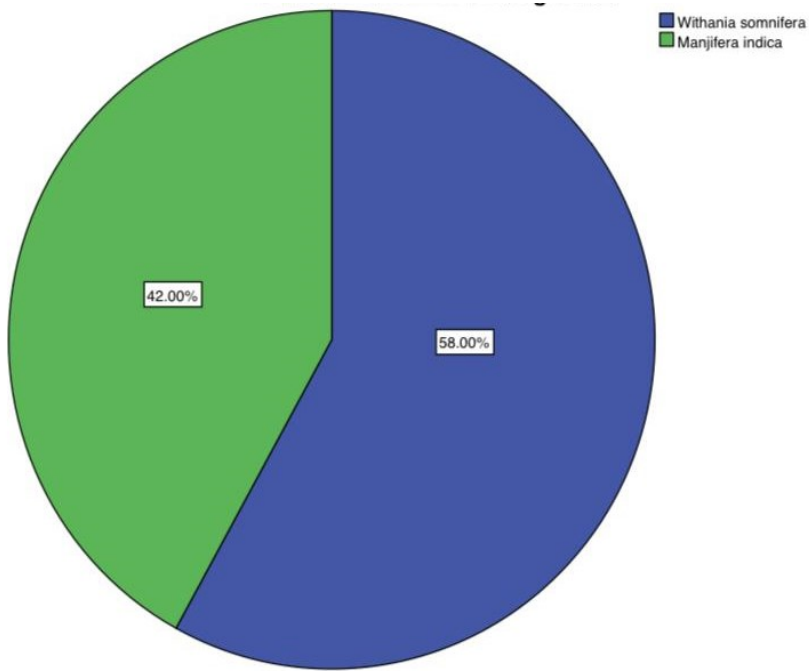
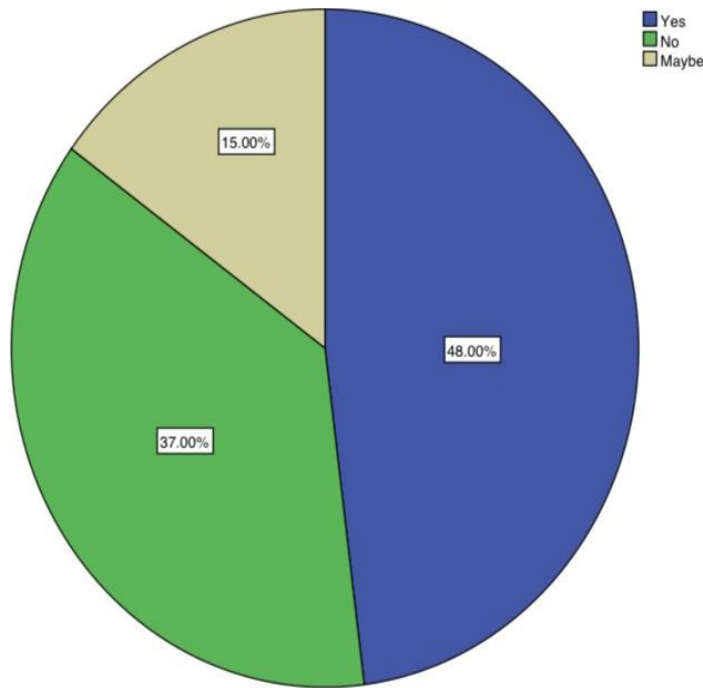
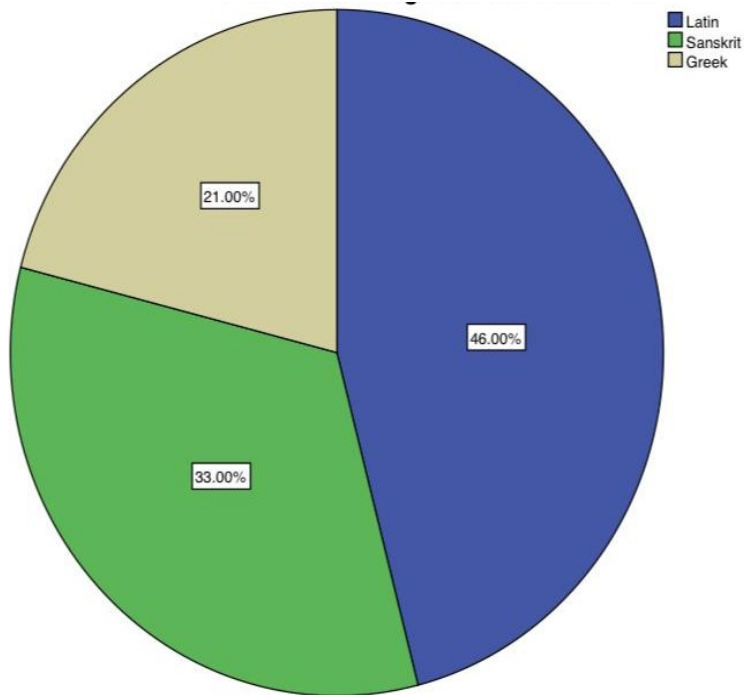


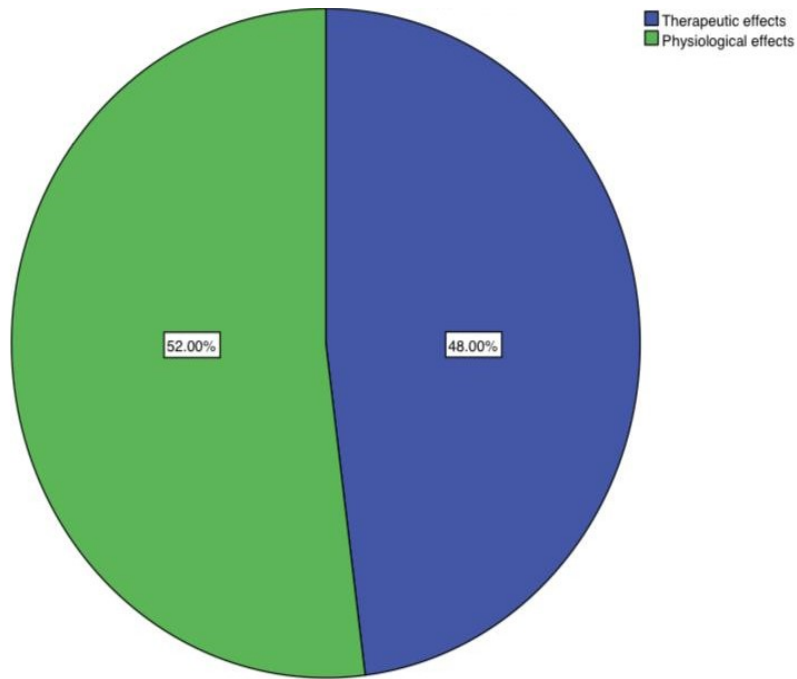
Fig. 5. The pie chart represents the percentage distribution of scientific name of ashwagandha, 58% responded *Withania somnifera* (blue) and 42% responded *Mangifera Indica*( green)



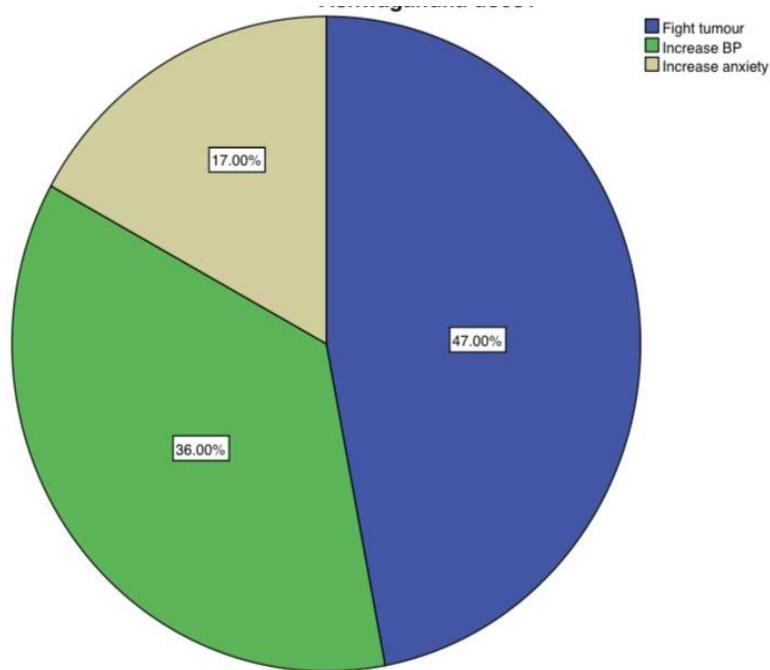
**Fig. 6.** The pie chart represents the percentage distribution of whether ashwagandha reduces stress, 48% responded yes(blue), 37% responded no(green) and 15% responded maybe (beige)



**Fig. 7.** The pie chart represents the percentage distribution of language from which ashwagandha was derived, 46% responded Latin (blue), 33% responded Sanskrit (green) and 21% responded Greek (beige)



**Fig. 8.** The pie chart represents the percentage distribution of effects of root of ashwagandha. 48% responded to therapeutic effects (green) and 52% said physiological effects (blue)



**Fig. 9.** The pie chart represents the percentage distribution of effects of ashwagandha. 47% responded fights tumour (blue), 36% responded increase Bp (green) and 17% said increase in anxiety (beige)

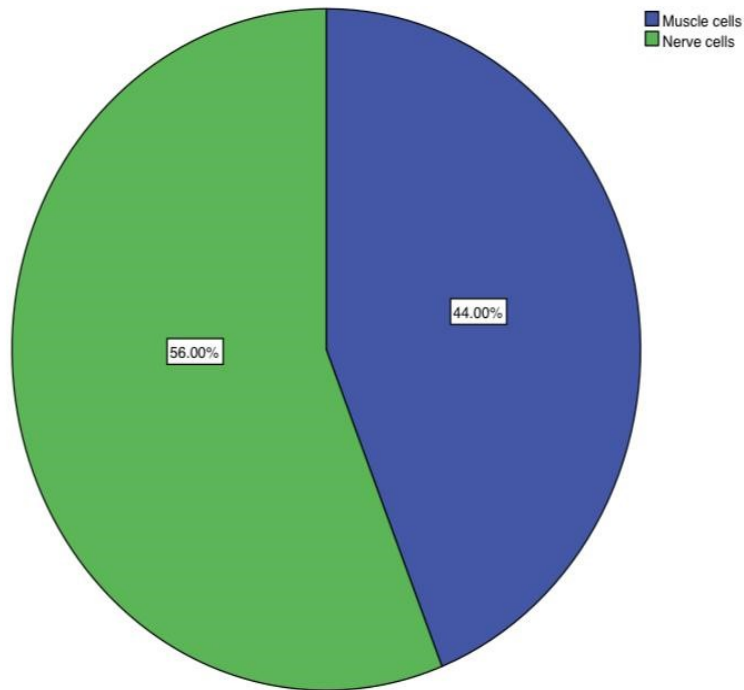


Fig. 10. The pie chart represents the percentage distribution of insulin sensitivity. 44% responded muscle cells (blue) and 56% responded nerve cells (green)

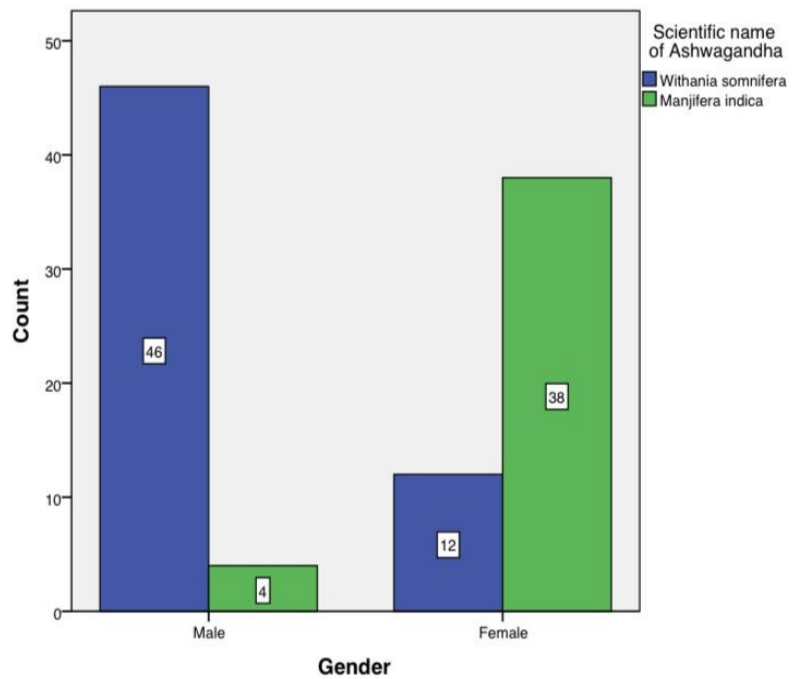
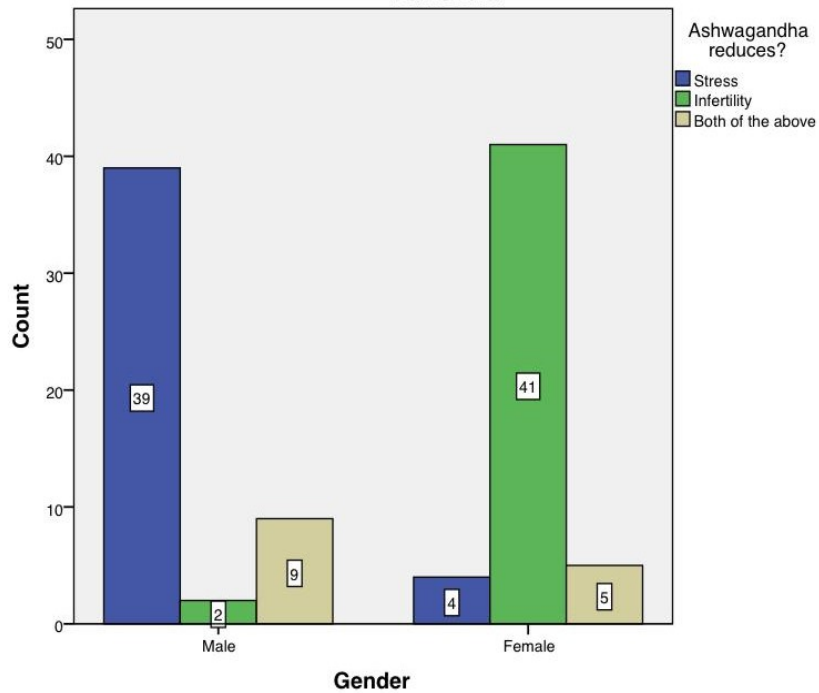
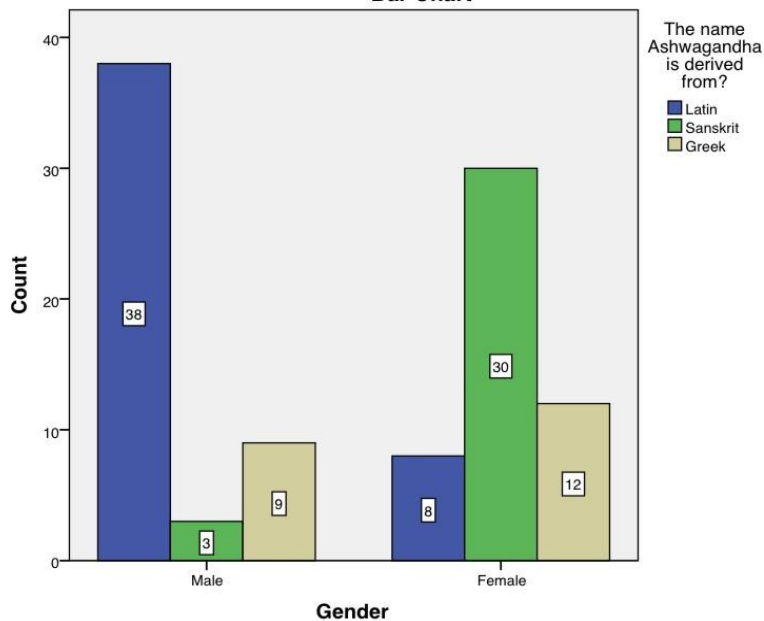


Fig. 11. The bar graph shows the association between gender of the respondents and responses to its scientific name. 46% males and 12% females responded *Withania somnifera* (blue) and 4% males and 36% females responded *Mangifera Indica* (green) p value- 0.001(<0.005) hence not significant





**Fig. 12.** The bar graph shows the association between gender of the respondents and Factors Ashwagandha reduces. 30% males and 4% females said Stress(blue), 2% males and 41% females said Infertility(green), 9% males and 5% females said both of the above(beige) p value- 0.003(<0.005) Hence not significant



**Fig. 13.** The bar graph shows the association between gender if the respondents and the language from which the word ashwagandha was derived from. 38% males and 8% females said Latin (blue), 3% males and 30% females said Sanskrit(green) and 9% males and 12% females said Greek(beige) p value- 0.003(<0.005) Hence not significant

In Fig. 6 the question was whether ashwagandha reduces stress, for which 48% said yes (blue), 37% said no(green) and 15% said Maybe(beige). In Fig. 7 the question was about the origin of the name Ashwagandha and 46% said it was derived from Latin (blue), 33% said it was derived from Sanskrit(green) and 21% said it was derived from Greek(beige). In Fig. 8 the question was about the effects ashwagandha root has, for which 52% said Physiological effects(green) and 48% said Therapeutic effects(blue) . In Fig. 9 the question was about effects of ashwagandha for which 47% said it fights tumour(blue), 36% said it increases Bp (green) and 17% said it increases anxiety (beige). In Fig. 10 the question was about where insulin sensitivity occurs, for which 44% said muscle cells(blue) and 56% said nerve cells(green) . In Fig. 11 the bar graph shows the association between Gender of the respondents and responses to its scientific name. 46% males and 12% females responded *Withania somnifera* (blue) and 4% males and 36% females responded *Mangifera Indica* (green). In Fig. 12 the bar graph shows the association between gender of the respondents and Factors Ashwagandha reduces. 30% males and 4% females said Stress(blue), 2% males and 41% females said Infertility(green) , 9% males and 5% females said both of the above(beige). In Fig. 13 the bar graph shows the association between gender if the respondents and the language from which the word ashwagandha was derived from. 38% males and 8% females said Latin(blue), 3% males and 30% females said Sanskrit(green) and 9% males and 12% females said Greek(beige). In a study conducted on ashwagandha, the results revealed that ashwagandha had hypoglycemic effects and was found to prevent stress induced hyperglycemia [6].

#### 4. CONCLUSION

A number of studies have already revealed the anti-tumour, anti-inflammatory and antioxidant properties of ashwagandha, From the above results, it may be concluded that the *W. somnifera* root extracts possess properties that can reduce blood sugar levels but its awareness among people must be increased, as a significant number of respondents are not aware of it.

#### CONSENT AND ETHICAL APPROVAL

As per university standard guideline, participant consent and ethical approval

have been collected and preserved by the authors

#### ACKNOWLEDGEMENT

I thank saveetha dental college for their constant support and encouragement to carry out this work and finish the work on time.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Available:<http://dx.doi.org/10.22159/ijpps.2016v8i10.8103>

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