Extraction and Chemical tests on *Cicer Arietinum* seed collected from North Bengal Region of West Bengal, India

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ABSTRACT

Chickpea is the seed of the chickpea plant, *Cicer arietinum*, which belongs to the family *fabaceae*. It offers a range of health benefits which includes lowering cholesterol, regulating blood sugar level, aiding weight loss, improving heart health, fighting nervous system disorders, improving digestion and relieving constipation. So in this article we emphasis on the different solvent extraction and its chemical tests have been shown from the seeds collected from local market of Siliguri district of West Bengal, India.

Keywords: Chickpea, aspirator, solvent extractor, Kabuli Chana

INTRODUCTION

Chickpea or chickpea plant is one in all the earliest cultivated legumes on earth. It offers a variety of health edges which incorporates lowering cholesterol, controls blood glucose level, aiding weight loss, up heart health, fighting system nervous disorders, up digestion and relieving constipation. Botanic name: Chickpea plant; alternative names: Bengal gram, Leci, Garbanzo, Garbanzo bean, legume. Chickpea is that the seed of the leguminous chickpea plant, that belongs to the botanic pea family (Cortés-Giraldo I et al, 2016). The fruit of the leguminous plant is oval in form and contains 2 seeds that are literally the chickpea we tend to eat. Its seeds are high in supramolecules. Chickpeas are basically made in carbohydrates, representing concerning twenty-seventh of its total content. Starch being predominant among others, is slowly reworked into aldohexose throughout digestion. This implies the fact that it's well salivated and chewed. It is best to consume chickpea at the side of a grain so as to produce a supramolecule of biological quality. Fats are gift in chickpeas as it is present in one-third of its total content. These fats are rich in mainly unsaturated fats, with little saturated ones. A number of the minerals in chickpea in large amounts are iron (about 3 times that of meat), potassium, magnesium, phosphorus, and zinc (Gangola et al., 2016). Chickpeas contain high amounts of folates that facilitate cut back attack risk of spinal cord and maintain correct functioning of the nervous system. Boot chickpeas contain important amounts of the B-group vitamins. It is one of the earliest cultivated legumes: seven, 500-year-old remains are found within the geologically excavated areas all over the globe. In 2016, Asian country made sixty fourth of the total production of chickpeas throughout the planet (Prakash et al., 2016). The plant grows to 20–50 cm (8–20 in) high and has tiny, feathery leaves on either facet of the stem. Chickpeas are a kind of pulse, with one pod containing 2 or 3 peas. It has white flowers with blue, violet or pink veins. Several species of chickpeas are cultivated throughout the planet. Desi Chana (Kabuli Chana) closely resembles each seeds found on archeological sites and also the wild plant ascendant of domesticated chickpeas, genus Cicerreticulum, that solely grows in southeast Turkey, wherever chickpeas are believed to be

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originated (Pradhan et al., 2014). Desi Chana(Kabuli Chana) has tiny, darker seeds and a rough coat. They're adult principally in Asian countries and alternative elements of the South Asia, yet as in Yaltopya, Mexico, and Iran (Beihaghi, Bahrami, Bagheri, & Mehrjerdi, 2015). Desi suggests that 'country' or 'local' in Hindustani; its alternative names Kale Chana ("black chickpea" in each Hindi and Urdu) or chholaa boot (Singh PK et al 2015). Desi Chana(Kabuli Chana) are often black, inexperienced or flecked (Chen & Van Vleet, 2016). This selection is hulled and split to create Chana decaliter. Garbanzo beans or Kabuli Chanas are lighter-colored, larger, and with a drum sander coat, and are mainly grow to be adult within the Mediterranean, Southern Europe, Northern Africa, South America, and also the South Asia (Meher HC et al, 2018). The name suggests that the beans are originally "from Kabul" in Hindi and Urdu, and this selection was thought to return to Kabul, a Mid-Asian country once it had been introduced to Asian countries within the eighteenth century. Associate in nursing uncommon black chickpea, Ceci Neri, is adult solely in Italian region, in southeastern Italy. It is around the same size as Garbanzo beans, being each larger and darker than the 'desi' selection(Domínguez et al., 2016).

MATERIALS AND METHODS

Collection:

Three various species of chickpea Seeds such as ICC4958, Him Chana, and JGK-03 were collected from local market of Siliguri district of West Bengal, Indian in April 2017. These seeds were identified at the herbarium section; a voucher specimen (E-B.C.P.S.R-17) has been deposited in the Department of pharmacognosy in Bengal college of Pharmaceutical science and research, Durgapur, West Bengal.

Fig 1. JGK03

Fig 2. Him Chana

Fig 3. ICC4958

Extraction:

Three types of seeds are crushed to course powder using electric grinder. The extraction is done using three different solvents, namely Petroleum, Ether, Chloroform and Methanol.

Equipment:

1. Speed Extractor: Grounded powder of three samples are loaded in the three chambers along with purified sand. The lead taking solvent is put in pure covered solvent after three cycles of automatic extraction the equipment (manufactured by BUCHI). The process continues for all three solvents. The extracts are stored in clean dried containers.
2. Aspirator: Dried grounded powder of three samples is put in closed glass aspirator. Solvent in same order is poured over the powder so that all powder is in direct contact with solvent. The aspirator is kept overnight undisturbed with solvent. Next day the extract is collected and stored. Next day each samples are filtered by the help of vacuum filter with Whatman no: 1 filter paper, then the filtered of each samples are collected in different containers.

CHEMICALS TEST

1. Test for Alkaloids: The samples are added with 3ml of picric acid saturated solution. Samples giving yellow precipitate show presence of alkaloid.
2. Test for Fixed oil: On a clean filter paper add 2 drops of each sample. If it leaves a translucent spot then it is the presence of fixed oil.
3. Test for Volatile oil: All samples are added with alcoholic solution of Sudan III dye. If the samples become red then volatile oil is present.
4. Test for Tannins: Add $FeCl_3$ to the entire sample. Yellow colour gives hydrolysable tannin whereas green colour give condensed tannin.
5. Test for Flavonoid: The samples are added with NaOH solution producing yellow coloration. On adding dilute acid if the mixture goes colorless then presence of flavonoid is confirmed.
6. Test for Glycosides:

Part A: Add dilute H_2SO_4 in the samples then add 5% NaOH neutralizing it. To it add equal volume of Fehling solution 1 and solution 2. Red colour is produced.

Part B: Add DM Water to all the test tubes until it is diluted then add equal volumes of Fehling solution 1 and 2. As a result, red colouration is observed.

Compare the redness if part A has more intensity than part B then we can say that there is presence of reducing sugar.

7. Test for Steroids and triterpenes: All samples are added with conc. Sulphuric acid. Yellow on top layer show steroid and green on bottom show triterpenes.

RESULTS:

Chloroform extract				
S.No	**Chemical Constituents**	**JGK03**	**Him chana**	**ICC4958**
1.	Alkaloid	+	+	+
2.	Fixed oil	-	-	-
3.	Volatile oil	-	+	+
4.	Tannins	-	-	-
5.	Flavonoids	+	+	+
6.	Glycoside	-	-	-
7.	Steroids	+	+	+

Table: 1 Result for Preliminary phytochemicals test of Chloroform extract

Pet ether extract				
S.No	**Chemical Constituents**	**JGK03**	**Him chana**	**ICC4958**
1.	Alkaloid	+	+	+
2.	Fixed oil	+	+	-
3.	Volatile oil	+	+	-
4.	Tannins	-	-	-
5.	Flavonoids	-	+	+
6.	Glycoside	-	-	-
7.	Steroids	-	-	-

Table: 2 Result for Preliminary phytochemicals test of Pet ether extract

Methanol extract				
Sl.No	**Chemical Constituents**	**JGK03**	**Him chana**	**ICC4958**
1.	Alkaloid	+	+	+
2.	Fixed oil	-	-	-
3.	Volatile oil	+	+	+
4.	Tannins	+	+	+
5.	Flavonoids	+	+	+
6.	Glycoside	-	-	-
7.	Steroids	+	+	+

Table: 3 Result for Preliminary phytochemicals test of Methanol extract

Here **+** sign indicates present and **–** sign indicates absentICC4958: Desi chick pea seed, Him Chana: Desi chick pea seed, JGK-03: Kabuli chick pea. From the above mentioned result, we can conclude that all proportion of extract

contains alkaloids and flavonoids and there is a stark absence of glycosides and tannins. Rests are present in some and absent in some.

CONCLUSION

Thus, from the present study three different seed extracts of **JGK03, Him chana, ICC4958** showed an abundant production of Phytochemicals as secondary metabolites and they can be used in the pharmaceutical industries for producing a potent drug .The studies result of the above three seeds gives a basis of its use in traditional medicine to manage ailments and disorders. It also contains some biologically active constituents worthy of further investigations.

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Conflicts of Interest: None

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