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### *Gile Multani (Solum fullonum): An Unani drug of mineral source*

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#### REVIEW ARTICLE

#### ABSTRACT

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*Gile Multani* (Multan clay) is a mineral origin drug used in Unani system of medicine as astringent and absorbent. Its origin in Unani classical text is said to be Multan. It is white to yellowish gray in color, odorless and tasteless, mostly used in powder form. It is used in preparation of dusting powder due to its absorbent property. It is also used in cosmetic products, since it softens and smoothen the skin and improves the blood circulation. It adds glow to the skin, as it is a natural cleansing agent. It has been employed in India as a substitute for soap in washing clothes and hair. It is used as a decolorizer for oils and other liquids, as a clarifying and filtering agent, and for cleansing of woolen fabrics. It has been used in *Tibb-e-Unani* and other traditional systems of medicine. Keeping in view the medicinal importance of the drug, an attempt has been made to review the available literature of *Gile Multani*.

**Keywords:** *Gile Multani*, Multan clay, Fuller's earth.

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#### INTRODUCTION

Fuller's earth is the name given to certain absorbent clays formerly used for removing grease and dirt from woolen goods, a process known as 'fulling'. This clay possesses the property of decolorizing and clarifying oils from animals, vegetables, minerals and some other liquids (Anonymous, 2005). It is white to yellowish gray in colour, odourless and tasteless, mostly used in powder form. If it is soaked in water it swells and acquires a non-plastic texture (Kokate et al., 2010). It is hard and heavy found in layers (Abdul Hakim, 1999; Ashraf, 2005). In some books three different varieties are mentioned based on its color which are white, greenish and reddish in which later one is of good quality (Ghani, 2011). *Gile Multani* is the common name of Fuller's earth in India and Pakistan, which is termed as *Solum fullonum* by International Nomenclature of Cosmetic Ingredients (INCI). It is a non-plastic form of kaolin containing aluminium magnesium silicate. It is classified as an absorbent and described to possess anticaking, bulking, gel forming, opacifying, viscosity controlling properties. Such qualities have made the compound suitable for use in cosmetic formulations. It is widely known for its cleansing and toning effects on the skin.

It renders the skin soft and toned effect in the process. The natural cleanser is preferred by people in a much wider range of age group for removing skin oiliness and acne control (Bhuwaneshwari et al., 2013). The clay like substance acts as astringent and absorbs excess oil secretion from the skin surface (Carretero & Pozo, 2009; Carretero & Pozo, 2010). Many ancient civilizations ingested and used natural clays in small amounts for nutritional and therapeutic purposes (Bargava et al., 2006). Geopagy of *Gile Multani* in Pakistan is very common especially amongst the women folk and children (Waheed et al., 2013). Fuller's earth is characterized by the absence of plasticity, high water content and foliated structure; dehydrated samples show a tendency to adhere strongly to the tongue. Indian fuller's earth consists of well-bedded, non-erectaceous, unctuous clay or shale, varying in colour to yellow, yellowish brown, buff, and greenish grey or light grey. It is soft when freshly excavated, but hardens appreciably on exposure to the atmosphere. It disintegrates in contact with water but shows no appreciable swelling. On drying at room temperature, the bleaching power of Fuller's earth is slightly altered; usually an improvement is observed.

Indian fuller's earth in the natural and inactivated state is inferior to imported English fuller's earth (Anonymous, 2005).

#### Vernaculars

The drug *GileMultani* is known by different vernacular names in different language, areas and traditions: Teenul Hind, Teenul Farsi (Arabic); Floridine, Multan Clay (English); Multani Mitti (Hindi); Gachni (Panjabi); GileMultani, Gile Sheerazi (Persian); Gopi (Tamil) (Anonymous, 2005; Kabiruddin, YNM; Kokate et al., 2010; Rafiquddin, 1985; Tariq, 2010)

#### Distribution

It is obtained from the area known as Multan that's why it is named as *Gile Multani* (Rafiquddin, 1985). Fuller's earth is mined in open quarry. It is found in Hampshire, Surrey, Somerset, Dorset and Gloucestershire (Kokate et al., 2010). India possesses large reserves of fuller's earth especially in Rajasthan. Up to 1912, Katni (Madhya Pradesh) was the only recorded source of production. It is now produced in Jabalpur and Bikaner. Although large deposits of good quality are found in Jaisalmer, they are not being exploited owing to their inaccessibility (Anonymous, 2005).

Fuller's earth occurs in association with pottery clay in Patharghatta hills in Bhagalpur district of Bihar. The occurrence of Fuller's earth in Kolhapur district has been reported. It occurs in fairly large quantity in beds near Kandhali, Idlai, Peddamal, Gingurti and Kiroli in Chincholi Taluka. In Madhya Pardesh, it is found in Gwalior division and occurs in lower Vindhyan series at Katni in Jabalpur district. Small quantities of fuller's earth are reported to have been mined in Anantpur and Salem districts. Adsorbent clay of fairly good quality is found in Tumkur (Anonymous, 2005).

#### Mizaj (Temperament)

The *Mizaj* of *Gil-e-Multani* was unanimously described by Unani physicians as *Barid* and *Yabis* (Cold & Dry) in second degree (Tariq, 2010; Ali, 1999; Ghani, 2011; Kabiruddin, YNM; Abdul Hakim, 1999; Ashraf, 2005; Rafiquddin, 1985).

#### Actions (Afa'al)

In classical Unani literature, various actions of *Gile Multani* have been described in detail such as *qabiz* (astringent), *habis-ud-dam* (haemostyptic), *musakkin* (sedative), *jail* (detergent), (Tariq, 2010; Kabiruddin, YNM); *musakkin-e-sozish*, *musakkin-e-hararat*, *motawwil-e-sha'ar*, *dafe tap* (antipyretic) (Rafiquddin, 1985); *mohallil-e-warm* (anti-inflammatory) (Ghani, 2011); *daf-e-nazla* (phlegm concotive), *muqawwi-e-meda* (stomachic) (Ashraf, 2005); and *dafedard-e-riya* (Abdul Hakim, 1999).

#### Therapeutic Uses (Istemat)

It is used in preparation of dusting powder due to its absorbent property. It is also used in cosmetic

products, since it soften and smoothen the skin and improve the blood circulation. It ads glow to the skin, as it is natural cleansing agent (Kokate et al., 2010). Fuller's earth is applied on the breast and then tied with a cloth in cases of galactorrhoea (Choudhary & Wahab, 2011). It acts as cleansing agent hence used for washing hairs. Its *Aab-e-Zolal* is administered per oral to treat epistaxis and haematuria. Its paste is also applied locally on forehead in case of epistaxis (Kabiruddin, YNM; Ghani, 2011). Paste of *GileMultani* is applied as a *Zimad* on suprapubic region in cases of *Kasrat-e-tams* (menorrhagia) (Ali, 1999); and to stop menstruation (Ashraf, 2005). The paste (*zimad*) of *Gile Multani* is very useful in case of prickly heat or heat rashes and it exhibits better result if used along with *Loaab-e-khatmi* (*Althaea officinalis* mucilage) (Tariq, 2010). The infusion (*Aab-e-Zolal*) is very useful to stop vomiting and also have good effect in cholera (*Haiza*) (Tariq, 2010); useful in haemoptysis (Ashraf, 2005). Fuller's earth has been employed in India as a substitute for soap in washing clothes and hair. This use is now has almost entirely ceased in urban areas, though still prevalent in villages. It is used as poultice for skin eruptions and substitute for talcum powder (Anonymous, 2005). *GileMultani* is useful in pain of lungs (Abdul Hakim, 1999). It is used as decolourizer for oils and other liquids, as clarifying and filtering agent, and for cleansing of woolen fabrics (Kokate et al., 2010).

#### Muzir and Musleh (Corrective)

Most of the Unani physicians have described the *GileMultani* has bad effect on intestine (Rafiquddin, 1985) and lungs (Kabiruddin, YNM; Tariq, 2010). While few others described that it has bad effect on urinary bladder and lungs (Abdul Hakim, 1999). Yakhni and Sartan Nahri have been mentioned as *Musleh* (corrective) of *Muzir* effect (Rafiquddin, 1985; Kabiruddin, YNM; Tariq, 2010). Hakeem Mohd Ashraf (2005) has mentioned in his book that it produces *suddah* that will be corrected by using *Karafs*.

#### Substitute (Badal)

*Gile Armani* is commonly being used as substitute of *Gile Multani* (Rafiquddin, 1985)

#### Dose (Miqdaar-e-khoorak)

*Nuqoo*: 7-10 gm (Tariq, 2010; Kabiruddin, YNM)

Powder: 3-5 gm (Tariq, 2010; Kabiruddin, YNM)

1-3 gm (Rafiquddin, 1985)

#### Chemical Constituents

Fuller's earth is essentially a hydrated aluminum silicate containing small proportion of lime, magnesia, alkalies and iron oxide. It generally contains a high proportion (up to 30%) of water (Anonymous, 2005). On its chemical analysis it has been concluded that it contains SiO<sub>2</sub> - 55%; Al<sub>2</sub>O<sub>3</sub> - 16%; CaO - 35%; MgO - 2%; Fe<sub>2</sub>O<sub>3</sub> - 6%; water 10% representing montmorillonite

50% and silica about 18% (Kokate et al., 2010). Montmorillonite [(Mg,Ca) O.Al<sub>2</sub>O<sub>3</sub>.5SiO<sub>2</sub>.nH<sub>2</sub>O] is a dominant, though not essential constituent of most fuller's earths; Beidellite [Al<sub>2</sub>O<sub>3</sub>.3SiO<sub>2</sub>.H<sub>2</sub>O] is the dominant clay mineral in some of them. The ratio of silica to aluminum varies from 4 to 6 in earth of good quality, which also contains a relatively high proportion of hydrous silica (Anonymous, 2005). In a study of neutron analysis of essential elements in multani clay it has been concluded that it contains Chromium (Cr), Copper (Cu), Iron (Fe), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Magnesium (Mg), Potassium (K), Sodium (Na), Selenium (Se), Zinc (Zn), Vanadium (V) (Waheed et al., 2012).

### Scientific Reports

#### Fungal / Microbial Agent

Samples of Fuller's earth were experimented on sterile petri plates and the fungiculated by pour plate technique Potato Dextrose Agar (PDA) medium amended with streptomycin antibiotic. The presence of fungi ranges from 3.66 x 10<sup>2</sup> CFU/gm to 118 x 10<sup>2</sup> CFU/gm of the sample. A total average of 31.21 x 10<sup>2</sup> CFU/gm of the sample was recorded from Fuller's earth samples. Among the recorded species prominent ones are *Aspergillus niger* showing 100% occurrence in collected samples, followed by *Aspergillus nidulans* and *Aspergillus flavus* with a frequency of occurrence of about 69.2% and 61.5% respectively. Other species such as *Aspergillus flavipes*, *Aspergillus ochraceous*, *Fusarium oxysporum*, *Penicillium frequentans*, *Trichoderma viridae*, *Syncephalastrum recemosum*, *Emericellaniidulans* and *Botryodiplodiatheobromae* were also seen (Bhuvanewari et al., 2013).

#### Decontaminant property

Fuller's earth shows maximum decontamination efficacy in mice against Sulphur Mustard (Mustard gas) dermal intoxicated mice, as compared with the efficacy of CC-2 (Kumar et al., 2010).

### CONCLUSION

*Gile Multani* (Multan clay) has been in use since times immemorial to treat wide range of indications. It has been subjected to quite extensive phytochemical, experimental and clinical investigations. There is a need of extensive scientific studies to validate the most of the claims of traditional medicines. A detailed clinical research appears worthwhile to explore the full therapeutic potential of *Gile Multani* in order to establish it as a standard drug.

### CONFLICT OF INTEREST

None declared.

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