

ISOLATION OF BIOACTIVE SUBSTANCE FROM PURE MUMIE

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ABSTRACT

Mumie contains humic and fulvic acids. For this study, pure mumie was fractionated into fulvic acid (FA) and humic acid (HA) fractions. Humic and Fulvic Acids are highly active bioregulators, and also they contain both macro- and micro-nutrients needed by human and animal bodies. Mumie is stone like material found in Mongolia at higher altitude, which has various medical applications in Mongolia and other Asian countries [2,3]. In the present study, the biological activity of mumie and its fractions was measured. Fractions were prepared according to the protocol described by I. A. Scheretkin and A.I. Khlebnikov. Both humic and fulvic acids can be obtained with the yields of 5.3% and 18.6 % respectively

KEYWORDS: mumie, fraction of mumie, bioactive substance

BACKGROUND

Mumie is widely used in traditional Mongolian medicine since ancient times. This pale brown to dark brown tar-like substance is termed as the “Baragshun”, which means mountain juice. It is found as deposits in caves and rocky crevasses of high mountains in Mongolia and other parts of Central Asia [2,3]. This traditional drug is also known as Mumie or Mumijo. In Ayurvedic medicine, Mumie is termed as Shilajit. There are several other terms for Mumie.

Mumie is claimed to possess striking healing effects and protective influence on the human body [1,2,3]. Mumie exhibits immune-stimulating and anti-allergic activity as well as an ameliorating effect against ulcers of varying origin and finally healing of bone fractures. These therapeutic actions make this traditional drug effective in

curing the following disorders: sore throat, angina, stomach and digestive complaints, oral cancer sores, gastro-duodenal ulcers, chronic fatigue, allergies, asthma, eczema, diabetes, hemorrhoids, immunodeficiency, gynecological diseases and osteoporosis. In addition, Mumie accelerates the healing of bone fractures and postoperative stitches. Mumie has been also used in Mongolian traditional medicine for maintaining physical and mental efficiency while promoting long life. It has been shown to be safe for regular use and harmless for people of any age. It is mumie’s medical significance and mumie contains bioactive substances. Therefore our study aimed to determine contents of the mumie such as humic and fulvic acids [2,3].

METHODS

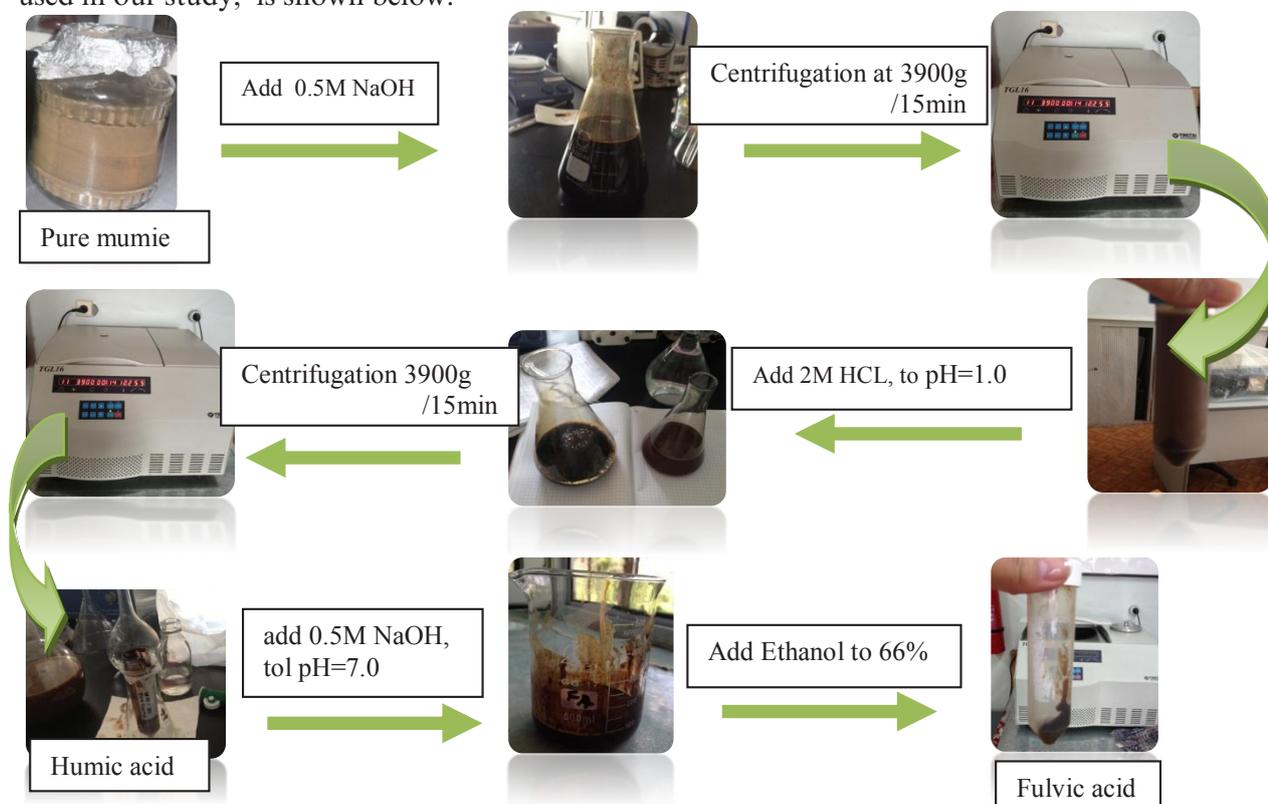
The materials were collected from Selenge province of Mongolia, in 2012. Mumie fractions were prepared according to a fractionation protocol by I. A. Scheretkin and A.I. Khlebnikov [4].

First of all, we purified natural minerals compounds as mumie. The isolation of humic substances from mumie was performed according to the classical method of fractionation based on different solubility in water at different pH values.

Briefly, 150 g of mumie was shaken in 750 ml of 0.5 M NaOH for 16 h at room temperature. The residue (humins and other insoluble compounds) was separated from the supernatant by centrifugation (at 3900g for 15 min). Then the supernatant was acidified (HCl; pH 1.0), and humic acids (HA) were precipitated. After centrifugation, the pH of FA solution was adjusted to 7.0 and the acid was fractionated by ethanol precipitation.

RESULTS AND DISCUSSION

Scheme of the procedure of fractionation of both humic acid (HA) and fulvic acid (FA), which was used in our study, is shown below:



From 150g of pure mumie, 160 ml humic acid and other compounds, 40 ml humic acid and 140 ml fulvic acid were obtained and their yields accounted for 20%, 5.3% and 18.6 % respectively. Humic acid, which is obtained from native mumie sample, was dark brown in color, while fulvic acid has brown and yellow colors.

In agriculture, nitrogen, phosphorus and potassium fertilizer combined with humic (e.g., can be made with ammonia neutralization humic ammonium fertilizer), has the fertilizer efficiency, and improves soil, stimulates crop growth, improves agricultural product quality, and other functions.

In the animal husbandry, sodium humate for velvet antler hemostatic, nitro humic acid urea complex for cattle feed additive also has good effect.

Fulvic acid is one of the components of the humus soil. It is used for medical treatment, can increase immunity of body, adjust intestines and stomach function, diminish inflammation and lymphokinesis role of hypertension, gynecological diseases curative effect is better. As feed additive it can increase appetite of pig, tender pork and increase its fat; improve gallinaceous laying rate in chicken by 15.5%, increase chicken egg hatch rate by 21.8%, improve

the rate of healthy young by 15-20%, and prevent livestock diseases. Many scientists throughout the world call Fulvic Acid "the missing link to optimum health". Because of its wide spectrum of action, it is difficult to say exactly how Fulvic Acid performs its miracles, completely dedicated to saving Mother Earth and all of her life forms.[5,6] According to the Water Quality Association, Fulvic Acid is a "water-soluble, natural, organic substance of low molecular weight, often found in surface water." It is one of several subclasses of Humic Acids that arise from complex mixtures of partially decomposed organic materials.

Even when minerals are supplemented, most preparations are only minutely bioavailable. Thus, both human and animal bodies cannot properly absorb the minerals. What this means for us is that

Humic Acids and Fulvic Acid complexes enhance mineral and trace element uptake, helping animals to maintain mineral and trace element balances in our bodies without threat of toxicity. Whenever minerals come in contact with Fulvic Acid in a water medium, they are naturally dissolved into ionic form. These minerals literally become part of the Fulvic Acid itself. Once the minerals meld into the Fulvic Acid complex, they are now bioactive, bioavailable, and organic. Humic Acids and Fulvic Acid complexes might very well be the answer to the 21st-century nutritional challenge. Fulvic and Humic Acids will break the bonds of inorganic matter and transform them into organic matter, including radiation and petroleum, and remove them from the body [4,5].

CONCLUSIONS

1. The study reveals the fractionation of both humic and fulvic substances are able to be performed from Mongolian mumie.
2. Both humic and fulvic acids can be obtained with the yields of 5.3% and 18.6 % respectively.
3. Mumie can be used for veterinary medical practice based on its biologically active substances such as humic and fulvic acids.

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