

4.1.3 Red and Black.

Medicinal Properties of Two Major Amazonian Colorants in Peruvian Folk Medicine

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Abstract

Red and black represent not only revolution and obscurantism in Stendhal's famous novel, but also the two colors that characterize the appearance of Amazonian indigenous people during festivals, war campaigns, and everyday life. The juice of unripe fruits from the *Genipa americana* tree provides a dark blue to black color and the seeds of the *Bixa orellana* shrub provide a orange color to red color. Field research and published data collected by other researchers in the Peruvian Amazon demonstrate that these two plants are very popular and used in medicine, both widely grown in mestizo and native rain forest villages. Achiote is mainly applied as a tonic for the digestive tract, a pain reliever for headaches, fever, liver disease, malaria, skin disorders and conjunctivitis. Huito is mainly used to treat skin problems, respiratory diseases, anemia and inflammatory diseases of female genital organs.

Keywords: *Bixa orellana*, *Genipa americana*, Peruvian Amazon, natural colorants, folk medicine

Introduction

Genipa americana and *Bixa orellana* are the most commonly used plant colorants in the Amazon. They are mainly applied to the human body, either painted onto the skin or in the form of ornaments. They are also widely used as medicinal plants, and their application to the body is not only decorative and symbolic, but also has protective and therapeutic significance.

The Amazon Basin is the place of origin of both plants. However, their long cultural history spreads not only around this region, but all over tropical America. Schultes and von Reis report (1995:153) that achiote, as well as cassava, pineapple and peanuts, were grown before the arrival of Europeans in the lowlands of South America. There is evidence that they have been used for thousands of years.

This chapter provides an overview of how both plants are used for therapeutic purposes in the folk medicine of the Peruvian Amazon – among the urban and mestizo population, as well as in indigenous communities. The chapter very briefly outlines their cultural use and deliberately does not deal with contemporary research on content substances due to limited space and to the lack of conclusive analysis, examinations, and tests, in particular in the case of huito.

Methodology

This chapter is based on a combination of data from my field research and information on the two colorants found in the ethnobotanical literature on the Peruvian Amazon. An overview of the research is comprehensive, however, only the part of the data from my field research has been processed.

All ethnic groups mentioned in this chapter live in the Peruvian Amazon. If no ethnic group is designated, it means that it is a folk medicine used by the mestizo population in the rain forest area of Peru, either in rural communities or cities.

Research was conducted among the following ethnic groups: Ocaina (Ampiyacu River basin, Loreto, Peru) in the years between 2005 and 2007, Shipibo (around the lake Yarínacocha, Ucayali, Peru) in the years 2007, 2008, 2009 and 2010, Quichua (Tigre River basin, Loreto, Peru) in 2007. More so, the study was carried out among the mestizo population

in Pucallpa and its surroundings, in Iquitos and its surroundings, and in the Tigre River basin between 2002 and 2010.

This study uses participant observation research method. I was present during preparations as well as applications of both plants, whether as colorants or as medicines; I conducted semi-structured interviews, which I recorded, and study “walks” through the rainforest and around villages and farmsteads, during which informants showed me the plants and explained their collection and uses.

Achiote/*Bixa orellana*

Bixaceae

This is a shrub or tree grows mostly from 3 to 6, maximum 10 m in height and its bark contains a color of a liquid orange. The leaves of the plant are ovate with a round, heart-shaped base and a pointed tip. The flowers with five petals may be white or pink. The fruit capsules are red, reddish-brown or green in color and are bi-valved (i.e. with two halves that fit together) and covered with soft bristles. It contains several dozen seeds covered with bright red, bitter aril that is initially fleshy, but hardens on drying. Capsules (Fig. 17) grow in clusters and can be easily opened (Škrabáková, 2013: 61).



17: Capsule of *Bixa orellana*. The seeds provide brightly red dye used mainly for decorative purposes. Quistococha, Peru, 2011.

Source: Author's Archive

In the Peruvian Amazon, the plant is commonly known as achiote, achote, acote and of course under innumerable native names. This chapter also describes the way achiote is called by mentioning ethnic groups, if the name is available. The Shipibo call this plant atase, masce, oshin mashe (Brack Egg, 1999: 70), joshin mashe (Arévalo Valera, 1994: 266), the Cocama rucu (Brack Egg, 1999: 70), rucu teweyun, the Quichua manturu, the Ticuna uxta (Barclay Rey de Castro, 2008:2 3), the Amahuac mashú (Brack Egg, 1999:70). Among Ocaina the plant is called ñoñoya and its fruit ñonoo.

Achiote is grown for ritual, ornamental, food, cosmetic and therapeutic purposes in all warm regions across the globe. It has been widely used since pre-hispanic times. The ancient Maya used it as food coloring and a spice, in body painting and the coloring of textiles and other artifacts; achiote was even used in their famous murals. The plant is highly recognized in the Amazon, and life would be unimaginable without it since achiote pervades all spheres of local culture. Indigenous people in the Amazon make ornaments on the body when they go hunting, visit their forest garden or on an expedition into the forest. They believe that the drawings will protect them from being attacked by animals, bites and evil spirits. In order to obtain a color that is so characteristic of the people of the Amazon, the seeds are soaked in water. In addition, most commonly, the fruit is opened, and the sticky aril is applied directly. Painting the face and body red is not done for purely decorative purposes, but also serves as a protection against sunburn. The color applied to the skin and at the same time operates as repellent (Škrabáková, 2013: 63, 64).

A team of researchers led by Silva Delgado (1999: 13) reported that the Ocaina use achiote to treat tuberculosis. Aril covering the seeds is diluted with water, and one glass is taken daily, until there is an improvement. During the treatment, neither do the patient allowed to have any sexual intercourse nor to eat fish and spicy food. According to the same authors, the Bora people use three glasses of water with macerated leaves to treat fevers. An identical prescription is used in case of measles (Delgado & Hermann, 1999: 16–17). Achiote is also part of the herbal mixture used by the Bora women in preparations of warm sitz baths for relieving perineal pain in the postpartum period. Here, acchiote leaves are used with the leaves of the following plants: *Piper peltata*, *Pouteria caimito*, *Citrus paradisi*, *Crescentia cujete*, *Persea americana*, *Psidium guajava* and *Mangifera indica*. Five leaves from each plant are boiled for an hour in five liters of water (Delgado & Hermann, 1999: 18). According to Silva Delgado and his team, the leaf buds have antiseptic and antipyretic properties and are effective against dysentery, venereal and liver diseases (infusion). The leaves are used as a gargle for tonsillitis (infusion). The flower infusion has a laxative effect. Conjunctivitis is treated with irrigations from young leaves and twigs macerated in water. Crushed leaves in the form of compresses are applied to the head in migraines. A root tea is taken to treat malaria (Delgado & Hermann, 1999: 43).

According to Alarco de Zadra (2000: 4), the plant has astringent, diuretic and aphrodisiac properties and acts against fever and dysentery. According to the same author, “it also acts against genitourinary system diseases and prostate problems. It is applied in case of venereal diseases such as skin infections, fever, and epilepsy. Achiote is also used to prevent scars after skin ulcers, burns and in the treatment of leprosy and smallpox. The Shipibo use this plant in eye infections.” Alarco de Zadra furthermore shows that body painting serves as a protection against insect bites.

The author provides the following prescriptions: The infusion from a handful of leaves boiled in 1 liter of water is used as a gargle to treat the oral cavity and throat inflammation. To make an infusion against bronchitis: 1 gram of seeds is dropped into a cup of boiled water and after a while is drunk. Burn ointments: seeds are grounded, rubbed in fat and warmed up.

The Cocama macerate leaves overnight in water, which is later applied to the inflamed skin sites. Likewise, vaginal douches are carried out in unspecified problems with the female reproductive system using the same liquid, where leaves were macerated overnight. This liquid is also applied for conjunctivitis. Patients flush their eyes and wash their head with it. During the treatment, the patient must stay away from direct sunlight, fire, and he

or she is not allowed to eat chili, rice and corn. If vomiting occurs, it is recommended to drink half a cup of a very concentrated infusion of the leaves twice a day.

A concentrated infusion of the leaves is also taken for 10 to 15 days in cases of malaria. At the same time it is prohibited to eat chicken and pork meat, fat and spicy food. Only green bananas and baked fish are allowed. Aril of the seeds is applied to the cold sores until they dry out and stop hurting. During the treatment, the patient must not remain in the sun, take a bath, eat fat, chili, rice, corn and predatory fish ("the fish, which have teeth"). Only banana and the grilled boquichico fish (*Prochilodus nigricans*) may be eaten. Manuel Vásquez Murayari provided all of the recipes listed (Barclay Rey de Castro, 2008: 23).

Pascual Aquituari within the ethnic group shared a recipe for red eyes- a twig from the shrub that is broken early in the morning, because during that time it has all its energy and liquid, which is later dropped into the eyes. Cold sores are cured using the same diet. The juice of grapefruit and salt are added to the aril paste. The cold sore must be treated with a laugh, in order to avoid infection (Barclay Rey de Castro, 2008: 24).

Brack Egg provides the following medicinal use: the juice of crushed leaves is taken in cases of hematemesis and diarrhea. It is also possible to drink an infusion of leaves and seeds that are used in cases of poisoning by bitter cassava. The fruit can be consumed in this case too. Without a prescription it is indicated for hemorrhoids, tonsillitis, and ulcers. In the case of headaches, crushed leaves are applied in a compress to the forehead. If respiratory disease is present, an infusion of seeds and leaves is taken. Liver disease is treated by decoction from young leaves or seeds. Infusion of the leaves is used to treat kidney pain. Macerated leaves are used in the treatment of skin inflammation and vaginitis. The diuretic root decoction is administered in cases of malaria and asthma. Other indications are high blood pressure, fever, burns, and conjunctivitis. Brack Egg (1999: 70, 71) also points out that an infusion of the seeds or leaves is cardiogenic.

Mestizo woman Noeli Napo Lancha from the Manchuria village on the Tigre River specifies that the leaves are picked, macerated in water, then strained, and the liquid is taken in cases of fever and headache. According to Rosa Andrade Ocagane, the Ocaina picks young twigs, insert them into the water, which thickens and is later dripped into the eyes in unspecified eye disorders. The seed dye is used as a sun protector.

Mejia and Rengifo (2000) provide the following recipes: skin inflammation – leave from 9 to 12 leaves in 1 liter of water overnight and then rinse the affected areas; vaginal antiseptic and healing agent – leave from 9 to 12 leaves in 1 liter of water overnight and then perform vaginal lavage; hepatitis – drink infusion of leaf buds; vomiting – 3 cups of infusion 3 times per day (one cup = 3 leaves) (Mejia & Rengifo, 1995: 15).

Arévalo Valera (1994: 166) indicates that the Ashaninka, Shipibo-Konibo and Yine people from Peru rubbed dye on their face and arms to protect against sun and mosquitoes, as well as for beautification during the traditional festivals (Fig. 18).⁸

If the sand or other small particles get in the eye of a person, place strips of inner bark in boiling water and after cooling, wipe the eye carefully and catch impurities. In order to normalize digestive system function after stressful situations, half a glass of the bark or leaf decoction is given 2 to 3 times per day along with leaves of *Melissa officinalis*, and flowers of *Tagetes* spp. extract and *Rosa* spp.

According to the people of the Amazon, achiote also has magical properties. Manuel Vásquez Murayari (Cocama) indicates a procedure that wards off evil spirits: leaves are put into a large vessel and, at night, when everyone is sleeping, the whole house is sprayed with the water and two leaves are suspended in nets. Before a mango goes to a funeral, he bathes in the extract of leaves. Using plants (without providing an exact prescription) protects small children from so-called mal aire

8 Arévalo Valera collected the ways of use of achiote among the Amahuac in Pariamano native community in Madre de Dios (A/N.).

(Barclay Rey de Castro 2008: 24).⁹ Pascual Aquituari (Cocama) indicates that a twig of the shrub with fruits is placed in the door, to protect the house from invasion by Tunchi (Ibid.).¹⁰ Arévalo claims that the Shipibo use achiote to repel erotic dreams. For those who have an excessive amount of sex dreams, the smoke of burned leaves is said to help (Arévalo Valera, 1994: 166).



18: Asháninka man painted with natural dyes obtained from *Bixa orellana* (red) and *Genipa americana* (black). Nueva Shahuaya, Peru, 2008.

Source: Author's Archive

⁹ In the Peruvian Amazon, mal aire is a common disease that mainly affects children. It is caused if a person is being blown by bad air, e.g. by the breath of a supernatural being or spirit of a man, who died an unnatural death (A/N). For other culture-bound syndromes, see chapters 4.1.4 and 4.1.5 (Ed.).

¹⁰ Tunchi is the ghost of a dead person, a lost soul that runs through homes to scare people and cause them disease.

Results

The parts of the shrub most commonly used for medicinal purposes are leaves, aril, twigs, buds and root. Based on the collected materials, achiote is mostly used in diseases related to the liver – hepatitis and malaria; to the eyes – conjunctivitis, red eyes, dirt; to the stomach – as a digestive tonic; and in headaches, fevers and a broad spectrum of skin problems.

Huito/*Genipa americana*

Rubiaceae

It is a fast-growing tree that can reach a height of 15–20 meters. Its trunk is straight, slender and cylindrical. The crown is rounded and highly set. Leaves are large, opposite, and obovate, with well-marked venation. Flowers are large, and yellow or white colored. The fruit is a grayish brown thick-skinned berry 5–8 cm in diameter; they may be wrinkled after maturing, but this does not detract from the quality of the fruit; it has an unusual aroma of the light-colored flesh that has a sweet taste. The tree sheds its leaves during long periods of drought (Škrabáková, 2013: 135).

In Peru it is commonly known as huito, huitoc, uvito, wito, witu and it also has names in the native languages of the Peruvian Amazon – the Quichua and Cocama call it yanipa, the Ticuna genipapo (Barclay Rey de Castro, 2008:105), the Ocaina call the plant juraavuro and huito ready for painting juraavu, the Shipibo-Konibo names are lana, launa, nandi (Brack Egg, 1999: 220) or nane (Arévalo Valera, 1994: 201).

Huito is one of the most popular trees in the Amazon. It has many ethnobotanical uses. Jams, syrups, cold drinks, ice-creams, compotes, salads, jellies, wines and liqueurs are produced from its edible fruit. In Peru, the huitoshado or huitochado – brandy made from sugar cane loaded with fruit pieces and flavored with honey from wild bees – is very popular. It is believed that the drink strengthens organism, and relieves it from the inner cold. In addition, it has even been reported that it counteracts sexual dysfunction to the elderly people.

Its famous blue-black color is provided by the juice made from the smashed seeds of immature fruits that oxidize in the air and immediately begin to turn blue (Fig. 19). The juice itself is slightly gray and invisible on the skin. That's why the indigenous people, when painting patterns on their body, add colorant to the liquid, such as a mud, charcoal or another dye. The ornaments on the body turn black within a few hours and can last up to three weeks. The color is used to dye artifacts – hammocks, textiles, clothes or wicker works. Indigenous people of the Amazon use it mostly in ritual body painting for ceremonial occasions.

The fruits are the favorite food for both animals and fish, because trees usually grow by the water. The fishermen use the fruits as bait. The wood is used to make household utensils and artifacts (Škrabáková, 2013: 138, 139).

Alarco de Zadra (2000: 125) indicates that the juice of the immature fruit is not only used as a repellent, but also ward off insects, but also against fever and as sun screen. It also helps with psoriasis and skin infections. "The Shipibo apply the heated juice of the fruit to skin affected by mycosis. Sugar from the fruit is administered in cataracts and in cases of hazy vision. A root decoction is used to cleanse the organism (Ibid.)." The author also provides a prescription in case of snakebite: it is recommended to drink the fruit juice after it is dissolved.



19: Unripe fruit of *Genipa americana*. The juice from its seeds provides dark blue or black dye. Yarinacocha, Peru, 2011
Source: Author's Archive

Brack Egg (1999) indicates a large number of therapeutic applications for this plant. In the case of respiratory tract inflammation, a syrup from boiled fruits is applied. Eating of ripe fruits is recommended for bronchitis. Without indicating what part of the plant should be used, or how it should be processed, Brack Egg reports that *Genipa americana* are used for hair loss, contusion or urticaria. A juice made from the fruit is taken internally for endometrial cancer and anemia. It serves as a diuretic and digestive. According to Brack Egg, the syrup from boiled fruits is used in inflammations of the respiratory tract and of the female reproductive system: vaginal infections are treated by vaginal lavage with an infusion of fruits and seeds. Fruits macerated in alcohol help in cases of asthma, and rheumatism. They are also eaten as an aphrodisiac. The juice of the immature fruit is used to treat mycosis. An infusion of fruits is taken in cases of diarrhea; a bark infusion is used to treat bleeding. An infusion of the leaves is used as contraception and the infusion of the ripe fruit as an abortifacient. Seeds, crushed in water, cause people to vomit. In the case of snakebite, the juice is drunk with water (Brack Egg, 1999: 221).

Silva Delgado and his team indicate that fruit eating helps with coughing up phlegm. Pieces of immature fruit are applied on the rotten teeth. An infusion of the fruit is used against diarrhea and the fruit syrup is used in cough treatment (Brack Egg, 1999: 63).

Mejia and Rengifo indicate the following therapeutic applications for the plant: a bark decoction (50 grams in 1 liter of water) is taken in cases of bleeding or pellagra. A cup is used 3 times per day. The juice of the ripe fruit is drunk throughout the day. 3 teaspoons of the fruit syrup are used in cases of anemia, bronchitis or to improve digestion. Lavage with a ripe fruit infusion is performed in case of vaginitis and endometrial cancer. An infusion of immature fruits and leaves causes abortion. An infusion from immature fruits is only used externally to irrigate and cover wounds, because of its healing and antifungal

properties. The root of the tree has a cleansing effect. According to the authors, the prescription should be as follows: 10 g of grated root is boiled in 1 liter of water; the liquid is drunk on an empty stomach. Seeds are applied in cases of dandruff and hair loss – they are crushed, boiled, and the liquid is later massaged into the hair every day for two months (1995: 107).

The Quichua use huito in healing newborns' umbilical stump. Niver Atahualpa Hualinga has indicated that the bark and fruits are used, but it is not specified how. Another Quichua, Joaquín Coquinche Sahua, claims that huito may cause so-called “cutipa”,¹¹ if a pregnant woman did not paint herself with huito or if, when she was young, she climbed a lot in this tree. In this case, the plant causes that the umbilical stump of her baby not to heal well. In this case, a so-called patarashka¹² of the huito leaves is prepared, and it is applied warm to the navel. The bark powder can be used as well (Barclay Rey de Castro, 2008: 106).

According to two Cocama women, Janeth Murayara and Elda Chávez Chota, huito is used to prevent anemia. The immature fruit is cut into small pieces, dropped into water and when it comes to a boil, young leaves are added and then boiled for 15 minutes. In order to ensure that the infusion is not too bitter, two cups of sugar cane juice are poured into the pot. A small glass is taken every morning before bathing. Furthermore, the Cocama use huito in case of bronchial disorders in children – ripe fruits are boiled for two hours, then honey and beaten eggs are added, and the mixture is boiled for another 15 minutes. A spoon is used every morning. Grated immature fruit is applied together with a plant called verbena (probably *Verbena officinalis*) to the body in case of itching. Another prescription indicated by the Cocama women is used in rheumatism. It includes the following ones: ripe fruits are chopped into pieces, loaded into sugar cane brandy called aguardiente, and then the vessel is carefully sealed and buried for 8 days in the ground where they macerate. If someone has been sick for two or more months, he takes a small glass every day in the morning. During the treatment, it is prohibited to remain in the rain, have sexual intercourse, eat chili, sour or spicy food and predatory fish. The Cocama apply the fruit cortex to burns. The inner part of the cortex is grated, and the juice is carefully put on affected places using cotton wool.

To get pregnant by an animal is also considered a “diagnosis” in the Amazon. It occurs due to carelessness. For instance, when a woman is taking a bath during menstruation; the anaconda may enter her body or an animal in human form shall pass itself off as her husband, when he works in the garden or gathers fruits in the forest. When this happens, a woman drinks the juice from grated fruits, and she is not allowed to eat certain types of fish in the process (Barclay de Rey, 2008: 106, 107).

In the Amazon, there is a feared parasitic catfish from the *Trichomycteridae* family called candiru, which can enter the urethra of people, particularly women. According to folk medicine, half a glass of the juice from grated immature fruit (mixed with lukewarm water) is given to the woman, and the rest is used for vaginal douches. This cure usually expels the fish and kills it (Škrabáková, 2013: 136). The Cocama also use the same prescription without vaginal douches (Barclay de Rey, 2008: 107).

The Achual-Shuar people apply the fruit pulp to an aching tooth to relieve from pain, and they do so all week in preparation of pulling out the tooth (Schultes & Raffauf, 1990: 384 in Estrella, 1995: 268). Duke and Vasquez (1994: 79) also report that the flesh of immature food is used in rotten tooth extraction among the Achual living on the Pastaza River.

11 “Cutipa” can be translated as “evil eye”. It is a punishment for treating plants, animals, or things (in particular sacred) badly or against the rules. Only plants, animals, or things that may cause cutipa (A/N). For further information see chapter 4.1.4 (Ed.).

12 Patarashka is anything that is wrapped in leaves, and thus roasted on a fire and embers. It is mainly food – there is patarashka from fish, meat, and other foodstuff such as rice, cornflour, etc. prepared. In case of the preparation of remedies, the source of an active substance (bark, leaves, etc. of a given plant) is wrapped in leaves – the leaves of the plant called bijao are used most frequently (A/N). For further information on patarashka see chapter 4.1.4 (Ed.).

The same authors indicate that the Achaual and the mestizo population in the surrounding of Iquitos apply an infusion of fruits and seeds for vaginal douches in female reproductive tract infections.

Estrella (1995: 268) indicates that the major diseases treatable by huito are diarrhea (infusion of immature fruits), bleeding (bark decoction), skin infections and anemia. Tournon (2006: 100) claims that the Shipibo use the bark decoction or an infusion of the fruits to treat digestive diseases and diarrhea. The Shipibo call this plant nane, and the Shipibo shaman Guillermo Arévalo Valera mentions several prescriptions. In the case of ascites, 2 to 3 teaspoons of the juice from the pulp are used together with the juice from the yushin huaste piri piri (*Cyperus* sp.). An unspecified amount of juice from grated fruits is taken together with the juice from another *Cyperus* species called the baque cahuantí huaste piri piri or the tea from leaves, to operate as an abortifacient. The juice from the pulp is applied on inflamed skin or itchy areas of the body for relief. In the case of measles, 4 teaspoons of juice from the grated fruit applied 3 times per day. If cough or bronchitis occurs, either the juice of the bark or ripe fruit boiled together with lemon juice, honey or sugar is given (Arévalo Valera, 1994: 201, 202).

Niver Atahualpa Hualinga from the Quichua ethnic group reports that the mother¹³ of huito is a spiritual being living on the shores of lakes, and for this reason the tree most frequently grows next to lakes. The mother of huito is in contact with the black anaconda. Therefore, a person turns black, if smeared with the juice from the grated fruit of huito (Barclay Rey de Castro, 2008: 106). A body that is painted with huito is also used as protection. Tenninson Murayari Silvano and Jarmen Luis Ahuanari do Santos (the Cocama) indicate that the juice from crushed leaves is applied or painted on the children's body to protect them against disease.

Results

The data collected for this study has provided evidence that seeds, immature and ripe fruits, leaves, bark and root are used for medical purposes. The plant is frequently used in respiratory tract conditions – cough, sputum, bronchitis, asthma; in skin problems – bruises, rashes, healing of burns and newborns' umbilical stumps; in dandruff, hair loss, diarrhea, vaginal infections or even in endometrial cancer, anemia and cleansing the body. In almost all the cases, we find that authors report abortifacient effects of the fruit. However, they disagree on the way they are applied.

Conclusion

Beyond their cultural and symbolic significance, both plants are used to treat a wide range of disorders and are considered to be very strong plants with magical properties. Red (*Bixa orellana*) and black (*Genipa americana*) colorants possess a crucial cultural significance among the native population. In addition to the symbolic meaning of body painting and ornaments, the coloring has also practical and beneficial health effects. It protects against sun damage and insects, as well as various skin problems and diseases. As indicated by my research and data collected by other researchers in the Peruvian Amazon, both trees prove to have wide therapeutic application. Some of the medicinal properties have already been confirmed by contemporary research.

13 In the Peruvian Amazon, it is believed that plants have souls – protective beings called “mothers” of plants (A/N).

Summary

I have demonstrated in this chapter a wide range of medical applications of two tree species of the Amazon, whose reputation is known well beyond the limits of this region, because they provide colorants, without which life in the Amazon would be hard to imagine.

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