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A Brief Review on Taxonomy and Ethnobotany of Genus *Gloriosa* With Special Emphasis on Its Philatelic Journey in World

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ABSTRACT

Present article mainly deals with the philatelic journey of genus *Gloriosa* which is represented by different philatelic products such as postage stamps, first day covers, cancellation stamp, etc. The flowers of this genus are appreciated through philately by many countries throughout the world which is intended to spread awareness about its usage and as an important component of ethnobotany. Recognition of the attractive Gloriosa flower is also marked out through the numismatics. Taxonomy, ethnobotany and ecology related to the gen*us Gloriosa* is also discussed here which helps to understand the execution of commemoration of the plant as one of the biodiversity element in philately.

Introduction

The genus *Gloriosa* (Linnaeus: 1753) (Colchicaceae: Colchicoideae) consisting of 11 species (POWO, 2023) worldwide and is one of the most beautiful genera in world representing climbers by leaf tendrils. Some species are having intense medicinal values and used by native people since ancient times. One of the *Gloriosa* spp. i.e. *Gloriosa superba* (Linnaeus: 1753) is very elegant and pleasant. It is commonly known as flame lily or glory lily; also called as tiger's claw or cat's claw. The plant is first reported from 'Malabar and Ceylon' of Asia (Hendrick van, 1686) and widely distributed Africa also. It is introduced at many places for its significant medicinal features, however, it becomes concurrently notorious for its fatal effects. Because of its different morphological forms and wide occurrence, many synonyms (botanical names) have been generated through different floristic works which is discussed in the taxonomy section of the article.
Present article discusses the importance of Genus *Gloriosa* for its medicinal and ethnobotanical aspects; and also taxonomy of the botanical names connected with plant. However, the genus is discussed thoroughly for its philatelic journey in world. Along with regular philatelic products, its representation in numismatics is also discussed here.

History and taxonomy of Genus *Gloriosa*:

Gloriosa is a genus of family Colchicaceae which is represented by total 19 genera (Vinnersten & Manning, 2007). History of recognition of this interesting 'lily genus' in floristics dated back to 17th century which also received possession on postage stamps released by many countries. However, its recognition on different postage stamps is known by different names such as *G. superba*, *G. simplex* (Linnaeus: 1767) and *G. rothschildiana* (O'Brien: 1903), although most of them are representing name *G. superba*. Taxonomic status of the names is discussed below.

Linnaeus (1753) established the genus '*Gloriosa'* with a single species named as *Gloriosa superba* based on the names published earlier viz., *Mendoni* (Hendrick van 1686), *MethonicaMalabarorum* (Hermann, 1687) and *Lilium zeylanicumsuperbum* (Commelin 1697). The word '*Methonica'* by Hermann and '*Mendoni'* by Hendrick van are based on Malayalam word '*Mendoni'* (language of major part of the then Malabar region i.e. south-western coast of the Indian peninsula) for the plant. Hermann (1687) noted his observations that the plant has abundantly distributed in Malabar and Ceylon (Sri Lanka). The name '*Gloriosa superba* L.' was lectotypified by Wijnands (1983) with the original collection by Hermann from Sri Lanka.

After establishment of the *Gloriosa* (Linnaeus 1753), Linnaeus (1767a) recognized another species of *Gloriosa* i.e. *G. simplex* based on population in Senegal (Africa). He (1767b) differentiated these two species based on leaf bearing tendril (*cirrifer*) in *G. superba* and leaf acuminate in *G. simplex*; the distinguishing characters appears variable according to ecological conditions in which the plant is growing. Moreover, Field (1971) has already discussed about the taxonomic and nomenclatural status of the name '*G. simplex* L'. In the view of the uncertainty connected with the name and absence of the type specimens, he insisted to consider this name as '*nomenincertaesedis'*. Field explained about description provided by Linnaeus (1767a) and Miller (1764) and 'blue flowered specimen (not known in *Gloriosa,* the researchers had never seen by them). Besides, Maroyi et al. (2013) analyzed morphometric data set with the help of cluster analysis and principal component analysis to define species boundaries among four species in *G. superba* complex. The study resulted in clear delimitation of these species, especially between *G. superba* and *G. simplex*. However, Maroyi's earlier study (2012), which is aided with molecular phylogenetic analysis using trnL-trnF as a plastid marker, does not seem to be clearly defining boundaries between two abovementioned species. Similar results were obtained by Vinnersten & Manning (2007) while studying classification of Colchicaceae.

The discussion leads us to consider the name *G. simplex* L. as '*nomenincertaesedis'* and the plant from Africa treated as '*G. simplex'* in different floristic works is considered conspecific with *G. superba* which is supported by various studies (Dyer *et al.* 1962, Polhill 1962, Wild 1965). Therefore, further in the paper the plant discussed is collectively considered as '*G. superba* L.' which includes plants connected to its synonyms viz., *G. simplex* L. and *G. rothschildiana* O'Brien. Along with the botanical names, some of stamps/philatelic products are labeled with local common names.

Ecology and distribution

G. superba occurs as herbaceous climber distributed in Africa, Indian subcontinent and Southeast Asia. In Africa it is distributed from eastern part Senegal to Ethiopia, uptoSouth Africa; also designated as national flower of Zimbabwe. It has been recorded to occur at altitude up to 2000m with hotter to milder parts (Chandel *et al.*1996, Jana &Shekhavat 2011). It is in great demand for its colchicine content; hence extensively cultivated in farms of Tamil Nadu and rest of South India. Its occurrence in wild is recorded as 'endangered' in India (Rawat 2008) though it is extensively cultivated at some places. This species is widely naturalized along the coast of eastern Australia, a weed of sandy coastal environments and offshore islands in tropical, sub-tropical and warmer temperate regions (George 1987, Orchrad 1994).

Ethnobotany of *G. superba:* curative or poisonous?

As the *G. superba* is known for both curing and fatal properties, its use by society remains an interesting and helpful element. Major feature the plant possesses is production of an alkaloid colchicine which inhibits microtubule polymerization and thus assembly of the mitotic spindle. The toxin has an inhibitory action on cellular division resulting in vomiting, purging, stomach ache and burning sensation, diarrhea, depressant action on the bone marrow and alopecia. In this regard the tubers are highly poisonous (Angunawela& Fernando 1971, Aleem 1992, Roberts *et al*. 1987). Due to presence of colchicine the plant has been used for suicidal purposes in Burma, Eastern Africa and India. (Menis 1989; Lewis & Elvin 1997). In spite of these detrimental features, appropriate doses of the plant extract or powdered form of plant parts work as remedy in different health concerns. It has been widely used in several indigenous systems of medicine for the treatment of various human ailments. In India, the well-known use of the plant is as ecbolic in labor (Hemaiswarya *et al*. 2009, Prakash *et al*. 2008, Malpani *et al*. 2011); because of this feature plant is well-known by the Sanskrit name 'Kalihari'. In addition, root extract of *G. superba* is known as folk remedy for termination of pregnancy; which is confirmed by a study on albino rats (Malpani&Mahurkar, 2018, Burkill 1995, Fowler 2007). The reports are also available on its use in female sterility, majorly in African countries and Asia (Bryant 1966, Burkill 1995, Dounias 2006, Fowler 2007, Watt &Breyer-Brandwijk 1962). The plant part has been known to be used as remedy in abdominal pain in many old world countries (Burkill 1995, Dounias 2006, Manandhar 2002, Neuwinger 1996, Saralamp *et al*. 1996). The plant is also known for its features as anthelmintic and antiparasitic (Singh 1993); used in asthma, cough, decongestant and chronic ulcers (Ghani 1998, Dounias 2006, Hassan & Roy 2005, Burkill 1995). Yeniger&Yewhalaw (2007) and Hassan & Roy (2005) reported its application in gout and tumor. Bulb of glory lily is reported as useful against snake bite venome (Duke 1985, Mors 2000). It is also used around doors and windows to repel snakes and also used as an antidote for snake bite and scorpion sting (Maroyi and van der Masen 2011;Fowler 2007; Neuwinger 1996, Samy et al. 2008, Thulin 1995). Remediation by *G. superba* is also known for neuralgia and mental illness (Dounias 2006, Dalziel 1955). Rahmatullah *et al*. (2009) observed its use in leucorrhea, skin diseases and rheumatism by applying powdered leaves with oil for 21 days. Nadkarni (2002) also reported its seed's utilization in muscle relaxation and rheumatism. Sesamum oil is known to be boiled with root stock of *G. superba* and applied to reduce pain in arthritis (Singh 1993). Leaves of the plant are also known as smoothening agent for skin eruptions and pimples (Hemaiswarya *et al*. 2009).

The glory lily is also studied for pharmacological activities by many researchers. As a result, modern pharmacological studies validated clinical uses of *G. superba* for the treatment of Familia Mediterranean Fever (FMF), gout, tumour etc. Rhizome extracts of the plant can work as enzyme inhibitor which will be helpful to therapeutic uses (Khan *et al*. 2008). Ethanol extract of rhizome and other plant part is found to be useful in juvenile mortality of nematodes (Ashokumar *et al.* 2017). A study has revealed that the colchicine extracted from *G. superba* is more effective as an anti-inflammatory agent compared with standard drug (Joshi *et al.* 2010). Colchicine usage for some human ailments is officially approved by The U.S. Food and Drug Administration (Ade & Rai 2010). Many other pharmacological studies on *G. superba* depicted intense potential of the species in different human disorders and traditional medicinal system already has revealed its wide range of therapeutic activities. Based on the information sources and experimental confirmations regarding *G. superba* and its toxicity instances, it should be used according to physician's suggestion of appropriate doses.

Conservation approach

As the plant possesses both remedial and fatal properties, its occurrence becomes subjective to particular place. At some places in India, people used to eradicate the plant to avoid suicidal attempts by surrounding people. On other side, the plant is harvested for medicinal uses leading to decrease its number in wild population. However, *G. superba* now occurs in cultivation in Southern India for its applications in traditional medicine and pharmacognosy. With this view about plant's presence in nature, it is needed to spread awareness about the usefulness of plant and philately is one of the important and effective ways for the recognition. It helped to emphasize the importance of plant and need to conserve it with mindfulness for the betterment of society.

What is Philately?

Philately is collection of postage stamps which not only concerned with the beauty but it also signifies the information and education of the philatelic products worldwide.

A postage stamp is a printed label used for communication purpose and to show that the postage has been paid. Some people collect them as a hobby as well as investment tool which helps to spread awareness of the philatelic product. Postage stamps are also useful for advertisement purpose and to raise funds for various national activities. Philately also includes collection of first day covers, post cards, etc.

Genus *Gloriosa* on Postage Stamps:

The graceful and magnificent flowers of the *Gloriosa* Lily have been featured on postage stamps of many Asian countries like India, Bangladesh, Thailand, Indonesia, Maldives and Vietnam. Some of the African countries also issued stamps featured with the glorious plant such as Zimbabwe, Namibia, Congo, Zambia, Ghana, Rhodesia, Uganda, and Senegal. USA also issued stamp on flame lily under series 'Tropical flowers'. The stamps are mostly issued under the series of Flowers, Native flowers, Exotic flowers etc. They mainly possess drawings and paintings of flower with attractive perianth, male, female reproductive whorls like stamens and carpels. On some stamps, the *Gloriosa* twigs with flower, buds, fruits and leaves with apicular tendrils have also been printed. In collected Postal stamps four different species of *Gloriosa* were found.

First stamp of *Gloriosa* (*Gloriosa simplex)* was issued in 1952 by the Belgian Congo (Belgian colony in Central Africa from 1908 until independence in 1960) under the series 'Native flora'. The stamp has painting of stalked fire lily flower with red colored tepals (perianth), 5 stamens, stigma and leaves with tendrils at tip. On the stamp, only the generic name *Gloriosa* is inscribed. In 1953, same stamp was published by change in name of the country. Instead of Belgian Congo, the name Ruanda–Urundi appears on stamp. In1960, same stamp was published with overprinted name 'KATANGA' (which was one of the four large provinces in the Belgian Congo). In 1963, Cameroon issued a triangular stamp on *Gloriosa* under series "Flower". Southern Rhodesia released two stamps of *Gloriosa*; first in 1953 and another in 1964. The stamps have picture of flower and tendrilar leaves with common name 'Flame lily' and image of The Queen Elizabeth . Rhodesia (previously Southern Rhodesia) printed a stamp on *Gloriosa superba* in 1966. In1979, after independence Rhodesia became Republic of Zimbabwe and *Gloriosa superba* was declared as the national flower of Zimbabwe, its cultivation is banned in the country. It is protected under the Parks and Wildlife Act from illegal harvesting. Zimbabwe released 3 postal stamps of *Gloriosa,* each in1989, 1999 and 2002. Besides, Sierra Leone (West African country) issued five stamps on *Gloriosa*. First in 1963which has picture of a twig with fully bloomed flowers, buds and tendrillar leaves. The common name 'Climbing lily' is inscribed on it. Second stamp was issued in 1986 under the series 'Flowers of Sierra Leone', it has depiction of twig of *G. simplex* with its beautiful flowers. In 1991, Sierra Leone issued a series of eight stamps "Butterflies and Flowers", one of the stamps has image of Large Striped Swordtail Butterfly (*Graphiumantheus*) with *Gloriosa simplex* flowers. In 1993, Sierra Leone published a series of

12 stamps were issued in this series, one of them has image of Gold-Banded Forester butterfly (*Euphaedraneophron*) with *Gloriosa* flowers on its background In the same year a in July another series 'Flowers' of 12 postage stamps was issued. The stamp featured with *G. superba* twig have bloomed flower, bud and leaves with tendrils. In 1995, on the occasion of International stamp exhibition "Singapore 95 " held in Singapore Sierra Leone printed a series of postage stamps 'Wildlife of Africa'. The image of *G. rothschildiana* flower with common name 'Flame lily' and the logo of the exhibition is printed on the stamp.

In 1965, Indonesia released stamp on *Gloriosa* on which botanical illustration of *G. superba* with flowers, buds, leaves and tendrils is depicted along with the inscription 'Ketongkat'. The imprinting of 'Ketongkat' is misleading, because it's an Indonesian name for a plant *Benstoneaaffinis*. This stamp was surcharged in 1966 under the series 'Flowers-National Disaster Fund'; the stamp has inscription 'Bentiana Alam Nasional'. Republic of Guinea published a series of 13 stamps entitled 'Guinean flora and female headdresses' in 1966. The female with colorful traditional headdress and local flora is depicted on stamp. One of these stamps have picture of *Gloriosa* flower with a woman. India published a stamp having impression of a painting of *Gloriosa* under series 'Flowers' in 1977. The painting of *Gloriosa* plantlet is with two *Gloriosa* flowers and leaves. The painting is made by famous Indian painter Shri J. P.Irani. The flowers have attractive red, yellow colored perianth and six stamens. The common name Karihari in Hindi is inscribed in Devnagari script along with generic name *Gloriosa* lily on the stamp.

In 1989 Uganda published a series of 8 postal stamps "Flora and Fauna". One stamp is imprinted with red-billed firefinch or Senegal firefinch (*Lagonosticta senegala*) and flower of *Gloriosa superba*. Japan in April 2021 issued a series of five posal stamps "Omotenashi - Hospitality Flowers". One stamp has imprint of *Gloriosa.* Many other postage stamps having imprinting of *Gloriosa* flowers are released by different countries. Some of them including above mentioned stamps are illustrated here with pictorial representation (Fig. 1 and Fig. 2)

Gloriosa on First Day Covers:

First Day Covers are envelopes affixed with a stamp or stamps on the first day that they are made available for sale to the public. On the first day of issue, the envelope is stamped with a postmark and the cancellation mark indicating the date and location of receiving the envelope into the postal service.

In the course of time, the postmark and cancellation mark are joined to form one continuous design.The 'postmark' is the circular mark and the 'cancellation' is shown as the horizontal bars that are applied directly onto the stamp. On 1st May, 1999, Honalulu issued four Tropical flowers commemorative stamps. Of which,one stamp is of *Gloriosa* and depicted on first day cover (4, 5, 6 of Fig. 3).

Nagarahole in Karnataka is a wildlife sanctuary famous for its native flora and fauna. Nagarhole Post office (Kodagu district) introduced permanent pictorial cancellation of *Gloriosa superba* (wild lily) on 6th November 1987. (1, Fig. 4). Apart from the regular postage items or philatelic products, other analogous items are also issued, e.g. *Gloriosa Lily* postage stamp of USA is represented on AT&T Phone card (2, Fig. 4). The Rhodesian Association printed six labels featuring African flowers to raise funds with slogan 'Fight TB' in Africa with the intension of prevention of Tuberculosis in Christmas of 1963.*Gloriosa* flower was printed on one of the stamps (3, Fig. 4). In addition, Cinderella stamp is another philatelic product similar to postal stamp, however it is not issued for postal purposes. It may include revenue stamp, seals or some similar items. One such Cinderella stamp is issued by Republic of South Malaku (Republic Malaku Selatan) in 1954 representing *Gloriosa* flowers (4, Fig.4).

Gloriosa and numismatics

Numismatics represented recognition of *Gloriosa* plant on some currency items like coins or notes and medals.

A Three pence coin (1, Fig.5) was issued by Federation of Rhodesia & Nyasaland (then including Zimbabwe, Zambia & Malawi) in 1955. Reverse description of the coin shows depiction of the flame lily dividing the date. The Federation broke up in 1963 with Malwi and Zambia forming old Northern Rhodesia. The remaining Rhodesia known as Republic of Rhodesia (Zimbabwe) issued a coin of 5 Cents in 1964. Obverse (the side not shown figures) description of the coin shows draped bust of The Queen (ELIZABETH THE SECOND) facing right. Reverse description shows Flame Lily at center (2, Fig.5) with the artist initials 'PV' below the leaf of the twig. Zimbabwe issued two varieties of one cent coins from 1980 to 1999.The first variety was minted from 1980 to 1988, is of bronze, while the other minted from 1988 to 1999 is of bronze plated steel. These round shape coins are having reeded edge and rims of both sides are raised and decorated. Obverse description (not shown here) of the coins exhibits the stone-carved Great Zimbabwe Bird which is national emblem of Zimbabwe; and the reverse description

(3, Fig. 5) of the coin represents '1' in wreath of leaves of Flame Lily. South Africa issued a five Cent silver coin(4, Fig.5) in 2010 under 'Nature' series (Lubombopark). On the reverse side of the coin, *G. superba* flower is shown.Further in 2019, South Africa issued a Five Rands (R5) silver coin. On the reverse side of the coin (5, Fig. 5), colored flower of *G. superba* is featured at the center, towardsright side 'GLORIOSA SUPERBA'is written and below this botanical name, the coin is denominated as 'R5'. In 1965, Rhodesia (later Zimbabwe) was a British Colony, issued 'Rhodesia Independence Anniversary Silver Medallion Set' of small and large medallions whose obverse side show same description (Ian Smith surrounded by legend 'RHODESIA 1965', not shown here). In the set, reverse description of large medallion exhibits the monument 'Great Zimbabwe Ruin' and reverse description of small medallion (6, Fig. 5) represents Flame Lily encircled by words, 'INDEPENDENCE, JUSTICE, PEACE, FREEDOM'. Along with coins, flame lily has been represented on bank notes also. Reserve Bank of Rhodesia introduced a note of one pound. Obverse image of the note shows twigs with flowers of flame lily on left side of the bottom of the note which was introduced on 21st September 1964 (7, Fig. 5). Notes in denomination of 1, 2, and 10 dollars were also introduced on 17 February 1970 by Reserve Bank of Rhodesia. It also replaced the Rhodesian pound of at the rate of 2 dollars to 1 pound. Obverse image of the note of 2 dollar exhibits flowers and leaves of flame lily on left side of bottom (8, Fig. 5).

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Plate No :1 (*Gloriosa* Postage stamps)

Plate No : 2 (*Gloriosa* postage stamps)

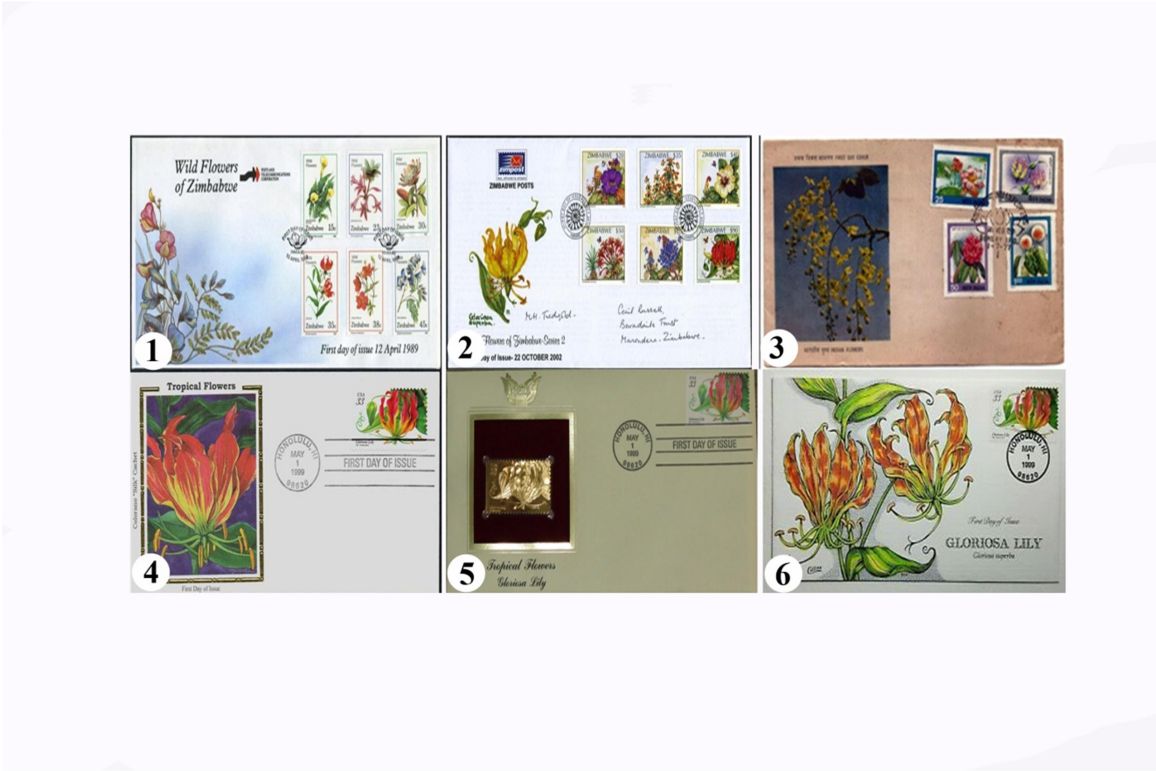

Plate No : 3 (*Gloriosa* first day covers)

Plate : 4 (*Gloriosa* on Phone card, labels and Cinderella stamp)

Plate 5 : (Gloriosa on Coins and Currency notes)