Cynomorium coccineum Linnaeus
17-19th Century Materia Medica Melitensis

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Summary
The search for possible effective therapeutic agents in the 17th century led to the discovery of Fungus Melitensis. This parasitic flowering plant was initially believed to grow only on a small islet off Gozo known variously as General’s or Fungus Rock. First mentioned by the Maltese historian Gian Francesco Abela in 1647, the plant was described and illustrated by the botanist Paolo Boccone from Palermo in 1674. A detailed clinical treatise was prepared by the Maltese physician Gio Francesco Bonamico in 1689. Basing the rationale of therapeutic properties on the "doctrine of signatures", the Fungus Melitensis was considered useful by virtue of its colour in conditions involving blood [particularly for dysentery]; while on the basis of its phallic appearance it was considered efficacious for venereal disease. The plant gained increasing popularity and started being exported overseas to Europe. The increasing demand on this restricted plant led to concern on its possible extinction and legislative measures were enforced whereby its gathering was reserved for the Grandmaster. The sides of General’s Rock were also made smooth to make access to the rock difficult. The plant lost its medicinal reputation during the early decades of the nineteenth century. The plant has now been relegated to the annals of medical history and folklore, though it is now designated a protected species.

Sixteenth century prescription lists from Santo Spirito Hospital at Rabat in Malta confirm that pharmaceutical practice during the Early Modern Period was very much in the mainstream of the Arabo-Hellenic medical tradition that flourished on the continent at the time. The materia medica lists shows an overwhelming majority of vegetable source material, many of which were available locally in the Maltese Islands, though some required importation from overseas probably from Sicily. Plants derived from the animal and chemical kingdoms were also utilised 1. Throughout the subsequent centuries very little improvement appears to have been made in the development of effective pharmaceuticals in spite of a continuous search for possible useful agents. Pharmaceutical practice at the end of the 18th century (1769) remained similar to that in the earlier centuries, though some of the previously listed items had been identified as useless and possibly harmful 2. The search for possible effective therapeutic agents led to the discovery of Fungus Melitensis in the seventeenth century - a plant that was reputed to have widespread pharmaceutical properties. The plant, known as Tarthith, grows in the Middle East and was reputed with medicinal properties by several medieval Islamic physicians including Al-Kindi [800-870 AD], Al-Razi [865-925], Ibn Masawayh [777-857], and Maimonides 1135-1204] 3. Fungus Melitensis [maltese: gherq sinjur or gherq il-general] is a rare parasitic flowering plant with a very restricted distribution. It was initially believed to grow only on a small islet off Gozo known variously as General’s or Fungus Rock 4, but it has now been shown to grow throughout the Mediterranean, Irano-Turkmen and Macaronesian regions 5. Devoid of chlorophyll, this parasitic plant is dark red in colour. It generally sprouts from a thick tuberous rhizome growing to a height of about seven inches. When cut, the rhizome and plant yield a mucilaginous bitter tasting juice that turns a brilliant red colour. This parasitic plant was first mentioned by the Maltese historian Gian Francesco Abela in 1647 who wrote "Cala ta’ Dwejra", di rimpetto si mira un scoglio nomato Flagira tal Gernal, bagnato intorno, intorno, dal mare nel piano, e nato di cui si genera un’herba che tira al verniglio, non dissimile nel di fuori, & in quanto alla forma a’ 1 finochi marini, questa diseccata e ridotta in minutissima polvere, e poscia data a’ bere, giuova mirabilmente alla dissenteria, si come per molte sperienze, ne siamo certificati, ne si raccoglie in altra parte per tutto questo dominio" 6.

In 1674, the botanist Paolo Boccone from Palermo described and illustrated the plant, named Fucus Zypoideae coccinus tuberosus melitensis, in his botanical work Icones et descriptiones rariorum plantarum, Siciliae, Melitae, Galliae, & Italie and in his Museo di fisica. He observed that when cut into thin slices and exposed to sunlight or covered with paper, its colour changes from white to red. This colour change was believed to result from the heat of the sun or the nitrogen in the air. When squashed, its juices are coloured blood red. The flesh of the plant tastes rather bitter and leaves the tongue and mouth corrugated and contracted. It was considered to cause constipation 7. In 1759 it was scientifically designated in the binomial system as Cynomorium coccineum by Carl Linnaeus in his Amonitates Academicae. In his work, Linnaeus included a treatise on Fungus melitensis prepared by Johanne Pfeiffer in 1755. The plant was considered an excellent remedy for drying up ulcers, strengthening gums and stopping uterine bleeding 8.

The Maltese physician Gio Francesco Bonamico in 1689 wrote a treatise entitled Fucus Spicatus Coccinus Melitensis, Plantita singularis. Accessit Plantarum quae in Melita & Gaulo Insulis observavit, brevis Notitia wherein he described the plant and its medicinal uses 9. Bonamico reported that "sed neque in ullo alio Europae, imo nequidem Asiae littore, quantum saltem haec gratia humana pontet diligentia comperit. Nam non modo nemo et tot insignibus Botonographis qui utriusque contenentis oras curiousque plerius litteraturarum necesseque inbibas plantas editis voluminibus sedulo descripsissent, similem ullam se observevasse commemorat, sed et peperini vir digrun rum memoria Petrus Castellus cum omnium medicinae partium tum specialitam Botanicae, dum
viverit, perittissimus atque ejusdem in celebri Messanensium schola
Professor, oblatam hanc sibi forte plantam ante annos aliquot a
Melitensi medico prorsus sibi incompartam novamque fassus
est ac nostrata huic sculputo peculiarem sic credere pronuntiavit" 10.
He further attributed medicinal properties stating that
"Unde aegros facilius citiusque quam ullo allo remedio sanatii
restitui constantissime asseverat" 11. The plant was prepared
by oven-baking in a well-stoppered earthenware vessel.
It was then powdered, and administered mixed with honey or
as a wine infusion. It was allegedly useful for apoplexy and
dysentery. The plant extract was noted to stain the skin and
also could be used to dye cloth. The staining properties of
the plant led Bonamico to believe that "tute le lucertuole che
vi si trovano di color vemiglio e d'una smisurata grandezza li quali
vanno succiandu letti frutti agupuisa di tanti api." The General’s
Rock Wall Lizard is now known to be a separate subspecies
designated Podarcis filfolensis generalensis that is different from
the mainland subspecies by the degree of melanism and more
vivid colours 12.
Basing the rationale of therapeutic properties on the
"doctrine of signatures" whereby the characteristics and
appearance of the plant were linked to a particular medical
condition, the Fungus Melitensis was considered useful by
virtue of its colour in conditions involving blood. In reviewing
the literature relating to the plant, Agius de Soldanis in 1746
comments that many of the previous 17-18th century writers
maintained that it was useful for curing dysentery, bloody
evacuations and every haemorrhage in the chest (? tuberculous
haemoptysis). It was also deemed useful in treating the gums
(? scurvy), haematemesis and for drying wounds. The plant
was generally taken as a half gram or more fine dry powder
mixed in wine, broth, or any other liquid. Alternatively an
ounce of the plant could be mixed with citrus jam or preserve
or any other astringent substance. The dose could be repeated
until recovery from the disorder 13. It was considered to be
so efficacious that any failure was considered to be a certain
indication that the plant used was not genuine. De Soldanis
warned foreigners that "It is most important to be careful where they buy this fungus medicine. It has become so popular and the
price asked for it is so high that many fake products have appeared
on the market products that are not the real fungus but a mixture of
other local mushrooms. The buyers will realise they do not have the
authentic product when the patient to whom they give it does not get
any better" 14. The plant preparation was "per esperienze medica
si vede d’aver piu’ efficacia nelle dissenteria il fungo Maltese, che
l’antidissenterico americano nominato l’epiquecana"15. The plant
was also used to control traumatic and surgical bleeding; and
was also considered useful for the management of venereal
disease. Bonamico wrote that "si trova notato negli scritti d’un
antico Medico Gozitano, che il primo effetto, allora quando fu
scoperto detto frutto, era per saldare le gonorrea inveterate, ed flussi
feminali: anzi vien affermato, che gli ‘Inglesi se ne servono solamente
per detto morbo." Accordingly "come costo la MSS antiche del
suddetto Fisico amico mio, che molte donne antiche Maltesi esiliati
nel Gozo come disoneste ne faceano diverse cattivi usi di tal piante.
Altre poi superstizismate credono. Ce tenendo tra le mammella
appeso al frutto si auguravano delle future felicite’: benche poi
quell’abuso per opera d’un Missione Cappuccino fu abolito"16. The
association to venereal disease was probably contributed to
by the phallic appearance of the plant and gave rise to the
popular use made of the plant by Maltese women.
Fungus Melitensis gained increasing popularity and
started being exported overseas to Europe. It was considered
so efficacious that several Grand Masters sent samples as a gift
to various Kings, nobles, relatives and other personalities in
Europe. The increasing demand on this restricted plant led to
concern on its possible extinction. Legislative measures were
enforced controlling the gathering of the plant. Its gathering
was solely reserved for the Grandmaster with transgressors
facing a penalty of being condemned to the Order’s galleys
for a number of years 17. The legislation failed to adequately
control illicit collection. In 1744 Grandmaster Emmanuel
Pinto de Fonca, on the advice of engineer Meradon, gave
instructions to have the sides of General’s Rock made smooth
thus making it more difficult for potential trespassers to climb
up the rock. In addition two watchmen were employed at a
cost of 50 scudi annually in 1746 to guard the rock, these
living in a dug-out cavern in Dwejra known as Ghvar ta’ l-
ghassa [Guard Cavern] 18. In 1785, Jean Houel described
the mode of access to General’s Rock 19. “A la sommité d’ une
petite portion de rocher sont attachés deux cables tres-forts, qui
par leur autre extremite, viennent toucher l’ecueil ou ils sont aussi
arretés; de ces cables pend une grosse ciasse A, semblable a ‘ celles
dans lesquelles on plante les orangs. Ces cables sont passés dans
des poulies attachées aux quatre angles superieurs de cette caisse,
qui peut contenir un ou deux hommes: en tirant un troisieme cable
moins tendu, ces hommes sont rouler les poulies sur les deux autres
cables & avancer le caisse; ainsi ils passent facilement de la rive a’
cet ecueil, ou de cet ecueil au rivage...." 20.
The decline of the Order and the civil disorder of the
French interlude led to a slackening of the vigilance of
guarding the rock. The ensuing abuses forced the British Civil
Commissioner Captain A. Ball R.N. to the issue of a specific
proclamation on March 1800. “Si prohibisce a tutti di raccogliere
il Fungus Melitensis. Avendo a caro Sua Eccellenza, che il buon
produttivi le radici comunemente dette Fungus Melitensis ossia
Ghirch Signur si erano mantenuti ed illesi come si mantenevano
nell’antico governo ha perciò proibito a qualunque persona di
qualunque stato, condizione di non ardire di raccogliere dette radici
senza il permesso di Sua Eccellenza o del sue Segretario” 21.
The plant retained its medicinal reputation during the early
decades of the nineteenth century. However by 1821-24, the
plant was reported to have “lost its high repute, and is at present
very little called for” 22. The cable-pulley system of carriage to
General’s Rock during the earlier part of the nineteenth century
was described by George French Angas who visited the rock in
1841. “Our picturesque group halted at the extremity of the point
between which and the General’s rock ran an arm of the sea which
we had to cross in a small box moved along by a rope and pulleys.
When the machinery was adjusted one man crossed the chasm first
we had to cross in a small box moved along by a rope and pulleys.
The journey over this arm of sea was any thing but pleasant as it consisted
of a series of jerks and the landing on the rock was very steep and
dangerous. . . .some time since [book published in 1842] the cables of this novel aerial conveyance gave way and precipitated the passenger into the gulf below" 23. After the accident, the cable-pulley system was not replaced 24.

The plant and General's Rock have now both been relegated to the annals of medical history and folklore. Because of its rarity and restricted distribution, the plant is now designated a protected species by virtue of Legal Notice 49 of 1993 issued through the Environment Protection Act. General's Rock has also been declared a Nature Reserve by virtue of Legal Notice 22 of 1992. Emulating the legislative situation of the Hospitalier period, access to the rock's plateau is prohibited. Pharmacognostic investigations of the plant have shown that the water-soluble fractions of the fresh juice possess a significant blood pressure lowering activity in the dog. No such activity was shown with extracts of the dried powdered plant 25. The lyophilized aqueous extract of the plant has also been shown to have a direct spermagogenic influence on the seminiferous tubules of immature rats presumably by exerting a testosterone-like effect. The extract reduced FSH and testosterone levels 26. Profound folliculogenesis was also noted when the extracts were given to immature rats 27.

References

5. G. Farrugia: Ghuwstaret il-Tagajja tigna. Malta, 1936; five pt. p.14 reported that he had been informed by various individuals that the rock was named Hagar il-Genral or General's Rock because the first person who found the plant was a general of a squadron of galleys belonging to the Orkres. However one would have expected that G.F. Abela (de dies infortunati) would have mentioned the discovery that allegedly occurred only about 50 years earlier. He calls the rock Hagar tal-Genral. G.F. Bonamico, writing 90 years later, (de dies infortunati) also notes that nothing was known as to how the plant was discovered. Bonamico believed that the plant was known and collected by the Punic Maltese. The plant, known as Tanthuh, grows in the Middle East and was reported with medicinal properties by several medieval Islamic physicians.
10. "But this plant cannot be found in any other European or Asian country at least according to the research conducted up to the present day, because none of the great botanists that have sailed around the countries of these two continents and have written volumes on every plant they have seen growing there, has said he had found a plant like this. Pietro Castello too, a great medical scholar and also a great botanist from the University of Malta, when this plant was given to him probably by a Maltese physician, confessed that he had never seen one like it or known that it grows only on our rock."
20. "To the summit of one part of the cliffs are attached two very strong cables, which, at their extremity reach the octopuses where they are also secured, from these cables hang a large box (marked A on the plate), similar to the tubs in which strange trees are planted. The cables pass through pulleys attached to the four upper corners of the box, which can hold one or two men, by pulling on a third, less strong, cable the men cause the pulleys to roll on the other cables and move the box forward, thus they can easily pass from the shore to the islet or vice versa."
24. G. Bligh: 1838, op. cit. Bligh also described the cable-pulley system: "This reef is about one hundred and fifty feet distant from shore, and is reached by means of a box with a pulley fixed on each end made to run on two stout cables, well secured on both sides. After the box is lowered from its position, one of the men in charge takes a rope which he ties on to one end of the box and entering into it, impels it on by laying hold of the ropes and jisting it forward until he reaches the rock. He then twists the small rope which he had previously fixed to the side of the box and suffers his companion to drag it over towards him by means of another which he holds in his hand for that purpose. As soon as the passenger enters, the man on this side slacks his rope and the box glides easily down the cables till about midway, where they bend. His companion on the opposite side then pulls it by main force, until it is sufficiently close to allow of landing without danger. Very lately the cables gone way, and have not yet been replaced."

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