

The Camellia Lineage from Seiohbo

西王母から見る椿の系統

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Observation of Ovary Hairs

Seiohbo(西王母) is the author's favorite camellia. The best thing about it is that it has a long flowering period, so each flower can be enjoyed slowly for a long time. From a botanical point of view, is one of the Japanese camellias are without hair on the ovary, but Seiohbo was discovered to have hair on the ovary, and is considered to be a camellia of unknown origin. Some people believe that it is related to the Wabisuke camellia, which also has a hairy ovary. Since the history of this variety is not clear as to why the cotyledons are hairy, I think it must be a very old variety, and I suspect that the name "Hino" (from *Camellia japonica* illustrated around 1700), which is recorded from the early Edo period, may refer to this species. This is because "Seiohbo" looks very similar to the flower depicted in the sketch of the same illustration (see photo).



The real Seiohbo and Hino in the Camellia Flower Illustrated Book (椿花図譜 1700)

I imagine that various camellia species have been introduced to Japan since the earliest unrecorded times, and that this may have given rise to such mysterious camellia flowers as Seiohbo. If camellias from other countries were introduced much later, there must be some

record somewhere of the introduction of a species with hairy ovary. The fact that some horticultural varieties have hairy seedlings, which have been handed down since ancient times, is considered as one of the evidences that such an unknown camellia was involved (crossbreeding), even if it is not described in the literature.

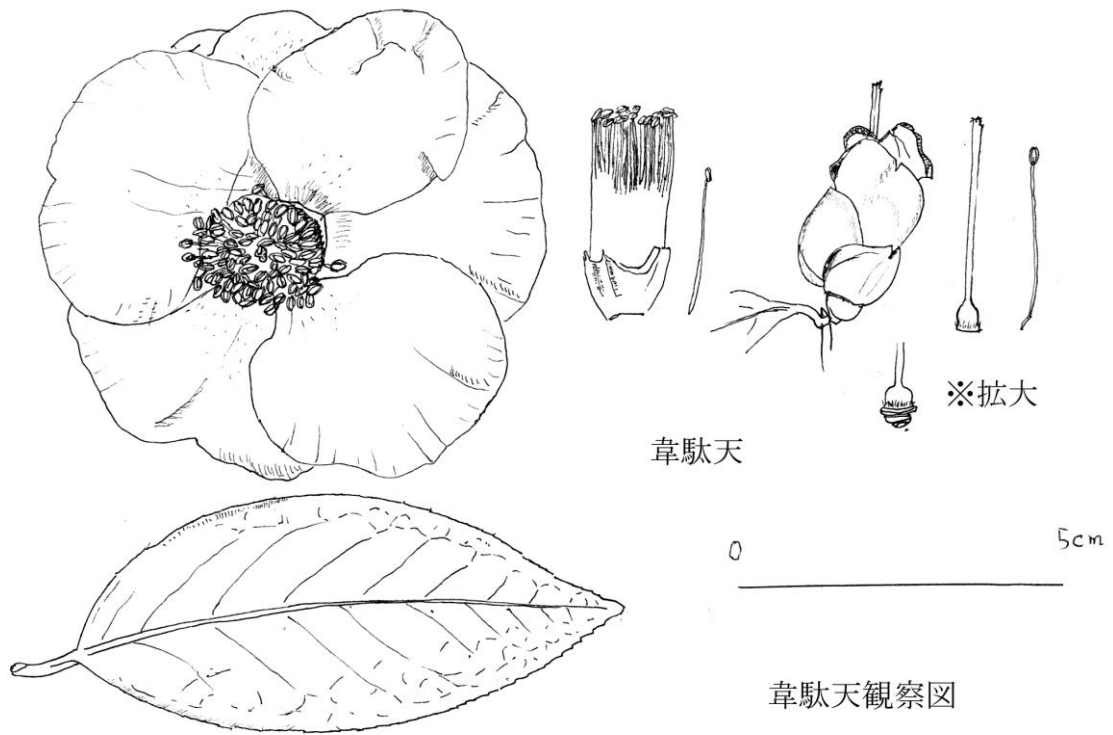
Now, there is some disagreement as to whether or not Seiohbo is a wabisuke (wabisuke camellia). This is because the position of researchers and others on how wabisuke should be understood is completely different. In horticultural culture, wabisuke originally refers to the small butterfly wabisuke (小蝶侘助), which is considered to be a camellia that produces pollen and blooms normally. (See the description of Wabisuke in "Hyakka Tsubaki Nayoseirotuki 百花椿名寄せ色付".) The wabisuke's stamen (wabidium, 侘助の花心) is a normal shaped stamen. This is also evident from the fact that the stamen is depicted in yellow in color drawings in all old documents from the Edo period (1603-1868).

Now, from a botanical point of view, this does not mean that it is degenerate, since blooming without producing pollen is explained as male sterility, a kind of deformity in which the stamens have developmental defects. Even if we consider wabisuke (wabisuke) as a species or a variety, if it degenerates so that it loses its reproductive organs, it is fatal and the species will become extinct. Male sterility is genetic, but I think it is a mistake to use the word degenerate to describe the inability to produce pollen (no anthers or stamens), whether it appears in a single flower or a double flower. In other words, I disagree with the idea that the wabisuke (even as a collective noun) must have male-sterile stamens, both in a botanical sense and in a horticultural sense, as well as with the idea that the wabisuke (even as a collective noun) must have degenerated stamens(no pollen).

Although this essay is largely concerned with wabisuke as a collective noun, I will not to use the word "wabisuke" to avoid misunderstanding. Wabisuke is originally a botanical variant name given to the siro-wabisuke(白侘助), and researchers are divided to admit individual garden varieties, such as Seiohbo and Tarohkaja(太郎冠者), are wabisuke or not. Some are regarding they are different botanical species, others are setting them different horticultural group.

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The horticultural variety that led the author to think about the hairs on the ovary of Seiohbo is Idaten (韋駄天). Since not much is known about this Edo camellia, an observation drawing is shown below. And old illustration of Honzouhanamakie 本草花蒔絵 (1739).



野口原図



本草花蒔絵登載図：いだてん

Idaten drawing

Idaten in Honsouhanamakie

This variety was acquired in the 1980s by the author's father, Shuji Noguchi, the owner of Noguchi Farm at that time, from an old gardening farmer (Tinkaen 椿花園) in Kawaguchi City. According to what Noguchi told me, the "Idaten" variety had been temporarily missing

until just before that time, but the garden had records of its previous sales, and the owner was able to find this variety when he went to the place where it had been delivered, relying on the sales records. The owner of the garden went to the supplier based on the sales record and was able to find this variety. (I had seen a variety with a "韋駄天" tag at a botanical garden, but it was a double-flowered variety, and the tag was different from the description in the camellia catalog "Tinkashu" (椿花集 1879、 Early Blooming , White and Single Flower, Medium Size) in the Meiji era.)

When the author grew this variety, it indeed started blooming in October. The leaves and the shape of the tree were different from those of similar known white single-flowered varieties. The flowers are unique, with white stamens (male sterility). I submitted the above history of this camellia to "Nihon Tsubaki Sazanka Meikan" (1998), as I thought it was a very important Edo camellia, as the garden had stopped producing camellias after that. I also submitted it again to the "Latest Japanese Camellia Pictorial Book" with a photo of another flower at the beginning of blooming. This was because the explanation I had reported was not published both times in accordance with the traditions and history. The photo was adopted, but Noguchi alone claimed to have applied the name Idate to this variety. Moreover, it has been determined that this variety is a different one because its characteristics are at odds with ancient documents. In other words, the flower shape is completely different from the description in the "Honzo Hana Makie" (1739). They say that it is not an old and genuine japonica because it does not "bloom in a vase shape like a bellflower(桔梗の如く壺咲き) . They say we use the name of an old variety without a valid reason.

The figure is shown in the Honzo Hana Makie. The figure is shown below. As you can see, it is drawn as a normal single flower.

It is true that the same book describes it as "きき屋うのごとくつぼさ起," but the picture of the open flower does not retain the shape of a bellflower. Usually, when tubular flowers start to bloom, the petals are folded in the middle to form a bellflower-like shape. Single-petaled flowers that begin to open all take the shape of a vase, and there is no flower that does not bloom in such a way. Descriptions in ancient texts depend on how the maker did describe, looking at them. The same book also describes "Bokuhan,(ト伴)", the description of Bokuhan's flower shape also begins with "hanagata tsubosaki hitoe..." . But it did not say that the petaloid part is also white. It is not unusual for even legitimate varieties to differ from the current descriptions of their flowers. If we ignore the fact that the other characteristics of this variety are consistent with the descriptions of ancient varieties and call it a different variety ,only because the flower shape is described differently, then there is no one today who calls a vase-flowering variety. This means that the same book's Bokuhan is

not a legitimate variety. Thus, there is no doubt that this variety is an Edo camellia (Edo camellia lidaten) that has been handed down to the new collection of camellia flowers (新選椿花集) in the Showa period.

The anthers are white at the beginning of blooming, as if it were a large White-wabisuke (白侘助). (See Photo below.) Not only that, but also the ovary have a few hairs on it. (See Photo 1)



(Photo 1) Idaten's ovary, hairs on the lower

part of the ovary 子房の下部に毛を持つ、韋駄天の雌蕊と真ぐり(雄^{しん}性不稔)で咲く花。



Idaten's Flower 白侘助より花は大きい。

As shown in Photo 1, only the lower part of the ovary has hairs. This point also caught my attention. This is because this type of hair growth on the ovary is very similar to that of Seiohbo. There were many old garden varieties known in the postwar boom of Edo camellia, but there is no other Seiohbo type variety with hairy ovary like this one. It is a very important old variety from historical and botanical points of view.

Therefore, I also examined the seedlings of Seiohbo. There are three varieties related to Seiohbo, one of which is "Ginza" ((Yurisibori x Seiohbo), whose father is Seiohbo, and the other is "Fubukimiyohrenji" (single, shortly striped, large flower, Photo 2) and "Fuyusakura" (see Photo 12, below), which were seeded from Seiohbo.



(Photo 2) 吹雪妙蓮寺 (Fubukimyohrenji) flower shape similar to Akebono and Beni Myorenji, bowl-shaped, large-flowered, extremely early blooming, selected from naturally seedlings of Seiohbo. 西王母の自然結実の実生から選別。子房元部のみ毛がある。早咲き。

Two of the three varieties had no hairs on the ovary, but the Fubukimyohrenji variety had so many hairs that it seemed to have more than the Seiohbo variety. The hairs grow only on the part of the ovary close to the saucer, exactly the same way as on Seiohbo. There are no hairs above the lateral part of the ovary.

I also examined other Seiohbo seedlings. I found the same type of flowers on the seedlings of three crosses: Seiohbo × Kaga Wabisuke (single pink medium-size , Photo 3), Seiohbo × Ohsakazuki (large red double-flowered flower, Photos 4 and 5), and Edithaetsubaki × Seiohbo (single medium-sized pink flower, Photos 6 and 7). All have hairs growing at the base of the ovary as well.



(Photo 3) Seiohbo × Kaga Wabisuke (peach color, single-layered, medium-sized flower; photo of flower omitted) Young fruit hairs (西王母 X 加賀侘助、子房の毛は上部にはない。)

As the fruit fattens up, you can clearly see the hairy parts of the ovary. The hairs on the small fruit can only be seen as shiny reflections when photographed.



(写真4)西王母(子房元毛)×大杯(子房無毛)
実
の花 (Photo 4) Seioubo × Ohsakazuki



(Photo 5)Seioubo × Ohsakazuki 若い果
若い果実の毛、元に生えている



(写真6)エディタエツバキ×西王母の花
枝葉は無毛でエディタエツバキに似ない。
(Photo 6)

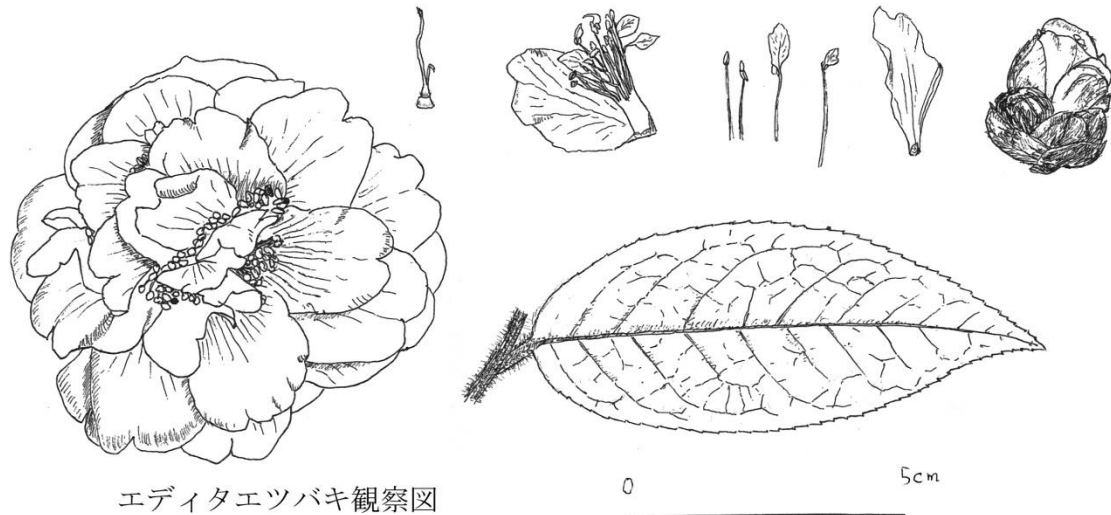


(写真7)エディタエツバキ×西王母(父系)子
房毛 (Photo 7)

In all of the crosses, only one seedling has been obtained for each of the combinations, perhaps because of the poor maternal fertility of Seioubo, and perhaps because the maternal line of Edithae camellia is a double-flowering variety. It is very difficult to crossbreed. Kaga Wabisuke is a variety with dense hairs on its ovary, and some people speculate that it is related to Seioubo. The Ohsakazuki is the first camellia azalea hybrid. Both camellia azalea and Ohsakazuki have hairless ovary.

The flowers of the double-flowered Edithaetubaki are very similar in shape and color to those of the old Edo camellia (*Camellia japonica* 紅車), and it is a unique species from China with long hairs on its branches and leaves. The calyx is large, dark brown, and does not fall off even after the flowers have finished. (The sepals holds in the same way when the fruit matured.) Surprised by the results of the observation of the seedlings(these hybrids of

edithae), I observed the double-flowered form in detail again.
 An observation chart is shown below.



Camellia edithae
 野口原図

The single-flowered basic species of Editae camellia (Chinese name:尖萼紅山茶) is said to be missing and is not known. The hairs on the double-petaled seedlings of this species have not been studied in detail. The illustration of "A REVISION OF GENUS CAMELLIA" (basic species) depicts a hairless ovary. The description says that the ovary is "hairy, hairless or slightly hairy."

As you can see in the observation drawing, the pistil of this double-flowered species is small and the pistil is often deformed because it is a double-flowered, and the pistil is difficult to observe. I observed several flowers and found that the ovary of all flowers had hairs only slightly growing at the base, the lower part of it. This is the same type as the hairy Seiohbo.

Types of hairs on the surface of ovary 子房表面毛のタイプ

After continuing our observation from the discovery of the hairs on the ovary of camellias in this way, we found a number of seedlings with the same ovary hairs as those of Seiohbo. Since the leaves do not look much like those of Seiohbo, I am not sure if Idate is directly related to Seiohbo or not, but I could sense a relationship between the two. In fact, many of the horticultural varieties known to be Seiohbo's seedlings have hairless ovary, which is not uncommon in my seedlings. This is not surprising to anyone, since it is thought to be a cross with other hairless cultivars. According to natural hybridization, most of the hairless camellias are the result of crossbreeding, so the ovary hairs on the seedlings do not appear and disappear in the seedlings.

Also, if Shirowabisuke and Kochohwabisuke, which have a few hair on the ovary, are hybrids between an all-over hairy species, (Salween camellia, or Pittard camellia and so on) and a hairless species (assumed to be *Camellia japonica*), Seiohbo may also be among continuous individual variations caused by intermediate hybrids.

However, the fact that the seedling from cross between the dense hair Kaga Wabisuke also have Seiohbo type hairs suggests that the Seiohbo type is strongly heritable to some extent. Also, the fact that this type of hairy camellia (editae camellia) was observed in the original species, suggests that the hairs at the base of the ovary are not an intermediate type, but rather a separate type. Following this line of thought, we have divided them into a separate type for convenience.

Cultivated varieties, which are not considered to be wild, are classified into four types: those with hairs on the entire surface of the ovary (Tarokaja type, dense hair type), those with hairs on the sides of the ovary and none on the tips (Shirowasuke type, lateral hair type), those with hairs on the base of the ovary and none on the sides or above (Seiohbo type, base hair type), and hairless type. (See the schematic diagram below.) This may seem a bit theoretical, but let's move on for the sake of what follows.

Observation of interior hairs 室内毛の観察

Now, apart from the hairs on the outer surface of the ovary, some species of camellias are known to have hairs on the interior wall of the ovary (the interior hairs). The author and his colleagues also made observations on the Kibana Kaydan Camellia and Kaydan Camellia (*Hydrangea hydrangea*), which were introduced directly from Vietnam. As a result, it was confirmed that they have indoor hairs. We were also able to confirm that some of the other species that have been conventionally introduced to Japan also have this indoor hair growth. Also, although it may not be well known, Seiohbo and the following horticultural varieties also have interior hairs.

室内毛のある原種ツバキと園芸品種の名簿 (筆者発見確認) *Camellia* species and cultivars with interior hairs.

C.amplexicaulis(ハイドウン), Kibana kaidou camellia(黄花海棠椿), Large golden flower tea (grandis 大金花茶), Small fruit golden flower tea(小果金花茶), *C.petelotii*(chrysantha 金花茶), Concave vein golden flower tea(*C.impressinervis* 凹脈金花茶), Straight vein golden flower tea (*C.multipetala* 直脈金花茶), *husuiensis*(扶スイ金花茶), *C.vidalli*, *C.quephongensis*, *C.hongkongensis*.

Kamohon'ami, Sagahon'ami, Kakureiso, Okinoshima, Surusumi, Ginza, Shiratama, Tamanishiki, Tamakaze, Dainichi no Akebono, Itokazari, Kotamanishiki, Akebono, Kouhoh, Syokoh, Kikaamo

hon'ami, Akebono, Hon'aminishiki, Tama`amaogawa, Dewatairinn (Taiheiraku), Kougetu, Koubai Masayoshi, Tamagasumi, Takaranohana, Nihon no Homare, Fuyuzakura,

(with surface hair) Seiohbo, Kagawabisuke, Sirowabisuke, Hinawabisuke, Fubukimyohrenji, Asukakou, Kiegao, Gekkounishiki, Tsukikage (C.flava x Kihou) Himekaidou-tubaki.

The outer hairs on the ovary of Seiohbo, Shirowasuke, and other varieties are also often a few abundant and occasionally almost nonexistent. The horticultural varieties with few ovary hairs are admitting indeterminate hybrids, and the amount of inner hairs may be very few or none (invisible), the same as the outer hairs. The original camellias (wild species) may also differ from the author's observations, depending on the strain. The names of the varieties mentioned are those that had at least a few hairs, and sometimes I saw a ovary that did not have hairs.

See photos 8, 9, 10, and 11 for cross-sectional views.

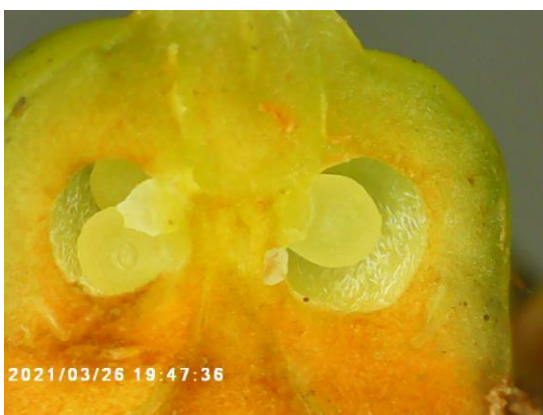


Photo8 C.peterotii (Kinkacha)

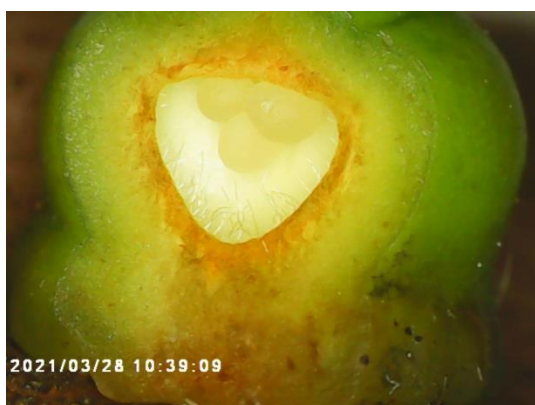
(Photo9) 白侘助 Sirowabisuke

金花茶の子房(写真8)胚珠と室内毛が見える。

白侘助の子房(写真9) 子房外面の花托に近い部分に毛が無く、横部側面に毛が多い。

室内毛も生えている。(Photo 8) Embryo and interior hairs of C.chrysantha.

(Photo 9) C.reticulata f.wabiske a dead embryo and inner hairs, outer hairs on the surface of the ovary.

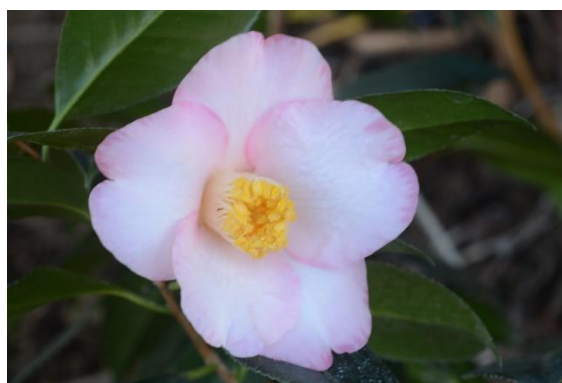


西王母の子房(写真 10)(Photo10)Seiohbo
部屋の断面 西王母の室外毛はスカート状
に広がる子房元部にだけ生えている。子房
の内底部に室内毛が見えている。

正義の子房(写真 11)(Photo11) Masayoshi
室内毛は少ないが生えている。

The Edo camellia is said to have developed through the crossbreeding of the yamatsubaki (Camellia japonica) and saruiwa camellia (snow camellia, rusticana). The author has reported botanical observations of some horticultural varieties of Edo camellia, such as their morphological characteristics that differ from those of camellia species, and reported observation of the Edo camellia's seedling's development and circumstantial evidence. I have also discussed depicted camellias in ancient documents from this perspective. As another circumstantial evidence of my theory, I can point to the observation of the interior hairs I have described here. Since this interior hair is not found in Japanese wild camellias, I imagine that some other species with interior hairs may be involved in their establishment of the old horticultural Edo-tubaki.

I am also looking at the seedlings of Seiohbo from this botanical point of view. I have noticed that some of the seedlings have interior hairs on the ovary. As I mentioned earlier, I have been presenting seedling varieties of Seiohbo. They are Ginza (Yurisibori x Seiohbo), Fubukimyorenji, and Fuyuzakura. Of the three varieties, Ginza (from Seiohbo's father's lineage) and Fuyuzakura do not have external hairs on the ovary. However, all three varieties have inner hairs. (See Photo 12: Fuyuzakura's indoor hairs)



(Photo 12) cross section of ovary of Fuyuzakura

Flower 早咲きの冬桜の花

(写真 12)冬桜の子房 子房の断面 外壁面毛はない。室内壁面毛は生えている。

These facts confirmed that the inner hairs, a trait of the parent Seiohbo, can be inherited from both paternal and maternal lines, and it was not necessarily linked to the outer hairs of the offspring. Some of my Seiohbo seedlings, whose names have not been announced, have no

outer hairs, and have no inner hairs at all. Although inner hairs are not necessarily a strong trait to be expressed, it seems that there is a strong tendency to be inherited in the same way as hairs on the surface of the ovary at crossbreeding of the *Camellia japonica* family of garden varieties.









The same can be said for observations of hybrids of the camellia species (they are not directly related to *Seiohbo*, and they have not been named and published.) I have not been able to obtain specific photographs of the hybridizing seedling. I have observed from crosses with inner hairless horticultural varieties and *C.flava*, *C.hongkongensis*, and *C.quephongensis* (all of which have both outer and inner hairs), but both outer and inner hairs have appeared in the first generation of hybrids.

Seedlings with derived hairs that appear to be from different species may have both traits from different parents. The light yellow double-flowered *Asukakou* is a seedling of the mother species *C.chrysantha*(with indoor hairs) and the father variety *Lasca Beauty* (*reticulata* camellia-type, with outer hairs no inner hairs), but *Asukakou* has both external and internal hairs on the ovary. And *C.chrythantha* cross line, *Kiegao*, has external hairs (derived from *Egao*) and also has inner hairs (derived from *C.chrythantha*).*Egao* has no internal hairs.

Phylogenetic study 椿の系統を探る

I report the relationship between the surface hairs of the ovary and the interior hairs of the ovary on horticultural varieties and original camellias with a schematic diagram.. I think this is an important observation for phylogenetic discussion of the establishment of old horticultural varieties, assuming that another species` blood is involved.

模式図(子房の断面) 子房毛の8タイプの関係 cross sectional views.

Outer hairs	No innerhairs	Having innerhairs
No outer hair type	Common cultivars <i>C. japonica, rusticana</i> 	<i>Shiratama, Kamohon'ami, and others</i> <i>chrythantha, amplexicaulis and others</i> 
	<i>Kochouwabisuke</i> 	<i>Shirowabisuke</i> (<i>C. reticulata</i> f. <i>wabiske</i>) 
Lower hairs type	<i>Idaten</i> <i>C. edithae</i> 	<i>Seiohbo, Fubukimiyohrenji</i> 
	<i>Tarohkajya, Sukiya and others</i> <i>C. ptardii, reticulata and others</i> 	<i>Kagawabisuke</i> <i>C. hongkongensis, frava and others</i> 

8 ovary hair types of species and cultivars,

Now, this observation of Seiohbo has led to knowledge concerning the formation of Seiohbo itself. Furthermore, through observations of horticultural varieties and original camellias, we were able to infer that there is another botanical lineage involved in the formation of the Edo camellia. The hairs on the ovary are a trait common to many species across several sections of the genus camellia. We were also able to confirm that this hair is inherited in modern new cultivars and seedlings that are known to be related to species that have ovary hairs.

Thus, the author believes that the most complex botanical traits may be that of Seiohbo. The botanical clarification of Seiohbo may be the key to unraveling the systematic mystery of the establishment of the Edo camellia (old cultivars made in the Tokugawa era.)

If Hino (Hinohayazaki) in the Camellia Flower Illustrated Album (椿花図譜) is Seiohbo, as the author imagines, then it is the Hino-dono camellia of the Hyakuchinshu (1633 Anrakuan Shakuden). It is said that the Hinodonotubaki was created in the Sento Palace in Kyoto under the guidance of Sir Hino Sukekatsu. in medieval times. What kinds of camellia gave birth to Seiohbo as the child of?