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**Ethnobotanical and faunistic aspects in the archaeological interpretation  
of the 17<sup>th</sup> and 18<sup>th</sup> century coffin burials in the Basilica  
of the Holy Trinity in Strzelno (Kuyavia, Poland)**

**Abstract.** Botanical analyses of samples taken from four coffin burials dated to the 17<sup>th</sup> and 18<sup>th</sup> centuries, located inside the Basilica of the Holy Trinity, at the Norbertine convent in Strzelno, in Kuyavia, revealed presence of thirteen plant taxa and numerous remains of *Fannia canicularis* pupae found among the plant remains. The practical and decorative properties of these plants, as well as their traditional symbolic meaning and application in the burial customs, have been discussed. The study provided new information on local funeral customs and allowed for the indication of the approximate timing of each of the examined burials, significantly enriching the data obtained by archaeologists.

**Keywords:** palaeoethnobotany, funeral plants, symbolic plants, insect remains, *Fannia canicularis*, 17<sup>th</sup> and 18<sup>th</sup> century coffin burials, burial customs.

*Introduction*

Systematic studies of plant remains found in burials have a long tradition (Jacomet, Kreuz 1999), but in Poland such studies are still scarce so far; they have only become more popular in recent years (among others Pińska *et al.* 2015; Pińska,

Drażkowska 2020; Badura *et al.* 2022). Meanwhile, the results of botanical analyses significantly enrich the ethnographic information on funeral customs in various regions and periods of human history (Lempiäinen-Avci *et al.* 2017; Šoštarić *et al.* 2017; Riera Mora *et al.* 2018) and on plant symbolism in funeral contexts (Dafni *et al.* 2006; Galera *et al.* 2013; Badura *et al.* 2022). They often provide information concerning the timing of burial and the status of the deceased (Nadel *et al.* 2013, p. 11776; Kelso, Miller 2016, p. 166; Ives 2021). Research on the remains of insects and other invertebrates is also important. The remains provide insight into funeral practices, environmental conditions in the period preceding the burial and after it, up to the moment of archaeological exploration, and also allow to indicate the time of the burial and many other circumstances to be exposed (Loni *et al.* 2019; Fägerström *et al.* 2020).

The subject of this work are organic samples collected from four coffin burials dated to the 17<sup>th</sup> and 18<sup>th</sup> centuries, located inside the Basilica of the Holy Trinity, at the Norbertine convent in Strzelno, in Kuyavia (Fig. 1). This unique architectural complex, consisting of two churches, *claustrum* and buildings outside the monastery, was systematically examined in the years 1981–1986 and 2000–2004 by employees of the Department of Archaeology of Architecture of the Institute of Archaeology at the Nicolaus Copernicus University in Toruń<sup>1</sup>.

The conventual church was erected for Norbertine nuns from the 1180s to the second or third quarter of the 13<sup>th</sup> century (Sulkowska-Tuszyńska 2003a; 2006, pp. 67–68; 2017). It is a three-nave basilica with a transept, towers and chapels, with unique Romanesque and later Gothic and Baroque elements. The burials from which the material analysed here was collected are located under the floor in the



Fig. 1. Strzelno. The location and the view of the monastery hill. From the left: Romanesque rotunda of St Procopius, monastery buildings, Baroque facade of the Basilica of the Holy Trinity (photo by K. Sulkowska-Tuszyńska)

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main and transverse nave (the northern arm of the transept, in front of the great altar of the Holy Cross). The bodies were placed in wooden coffins (graves: G-3/20, G-11/2001, G-13/2001, G-19/2001), along the east-west axis, with the viscerocranium facing east, and the coffins placed directly in the ground (Sulkowska-Tuszyńska 2003b; 2006, Figs. 45, 71; 2007, pp. 51–54; 2010, pp. 418–420, Figs. 34–54)<sup>2</sup>.

The type of features and the nature of the collected samples determine the scope and purpose of this work. Its main task was to provide natural data that could enrich the archaeological information on burials deposited in the Basilica of the Holy Trinity.

### *Archaeological characteristics of the burials*

**The G-3/2000 burial** was located on the northern side of the nave, close to the transept, about 0.8 m below the marble floor of the church<sup>3</sup>. It stands out from other graves inside the church for several reasons. The lid was studded with bronze studs, the coffin headrest was decorated with studs arranged in the shape of the Christ monogram (IHS) and its length was distinctly larger than the much shorter body. The interior of the coffin (1.90 x 0.25–0.45 m) was carefully lined with a thick fabric with a loose weave and covered with tar. It was established that a male was placed here (height about 170 cm)<sup>4</sup>. The skeleton was intact, articulated, with hands folded over the pelvis. The yellowish brown tiny fragments of slightly shiny fabric (silk?) were spread on the entire skeleton, especially around the head and lower legs. Lumps of white lime were scattered on the bones, and numerous dark spots occurred at the bottom of the coffin – probably remains of the same fabric as used for the pillow and lining of the entire coffin. The uniqueness of the G-3/2000 grave is also emphasised by a small coin (1.4 cm in diameter) originally placed on the lip<sup>5</sup>. The practice of putting coins in the mouth of a deceased in post-medieval burials has also been confirmed by other studies<sup>6</sup>.

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<sup>2</sup> They were discovered during systematic excavations carried out inside the basilica in 2000 and 2001 under the supervision of Krystyna Sulkowska-Tuszyńska. These were excavations preceding the major renovation of the church.

<sup>3</sup> The location of the burials described here – see the plan of the Basilica of the Holy Trinity in Strzelno (Sulkowska-Tuszyńska 2006, Fig. 71).

<sup>4</sup> Anthropological analyses of selected bone material from Strzelno, from the research carried out in 2000–2004, were performed by Dr hab. Tomasz Kozłowski, prof. UMK from the Institute of Archaeology at the Nicolaus Copernicus University in Toruń.

<sup>5</sup> Found on the teeth (upper front teeth), patinated (about 1 mm thick), unreadable and cracked after conservation.

<sup>6</sup> In the post-medieval period, the medieval custom of putting coins in the graves grew and lasted until the end of the 17<sup>th</sup> century; later it occurred occasionally. Putting coins in the mouth and on other parts of the body inside the coffin is also known from nearby Kruszwica. The very phenomenon of the

From the chronological order of the nearby burials and dating one of them to the first/second quarter of the 17<sup>th</sup> century (Sulkowska-Tuszyńska 2003b, p. 134 ff.), and according to the habit of using studs, known from Strzelno at the latest from the first years of the 18<sup>th</sup> century, it can be concluded that the coffin in question was placed in the grave in the first half of the 18<sup>th</sup> century. The unique burial site, just in front of the former *chorus maior*, suggests that the deceased had a special position in the Strzelno convent.

**The G-11/2001 burial** was discovered in the basilica's transept, at the base of the Holy Cross altar. The body was deposited in a coffin with a flat lid, and a pillow was placed under the head. A broken tailor's pin made of bronze (preserved length 3.5 cm) with a spherical head 3.5 mm<sup>7</sup> in diameter was found in the grave. Anthropological studies have shown that a 60-year-old woman was buried there<sup>8</sup>. On her left collarbone there was a fragment of a ceramic tile 2.5 cm thick, and on it a part of a brick measuring 8 x 14 cm. Brick and tile probably came from the damaged, older 15<sup>th</sup>–16<sup>th</sup> century floors and were not related to the custom of weighting or covering the body with stones, bricks or tiles, known from the Middle Ages and used even in the post-medieval period<sup>9</sup>. Next to it, on the cervical vertebrae, was a rectangular, slightly shiny, light brown fabric (8.5 x 6 cm). There were visible traces of the material being rolled up at the edges and sewn appliques – 0.3 cm wide ribbons arranged in the shape of unrecognized letters<sup>10</sup>. It was probably a scapular, one of the two sheets of fabric in which, for example, a holy medal or a picture of Mary or Christ were worn. Small scapulars were worn by members of religious fraternities. This tradition derives from the monastic custom of wearing a large scapular – a long apron covering the back and chest, which Saint Benedict instructed monks to wear to protect the habit during work (Gloger 1903, pp. 309–310; Brückner 1939, vol. 2, p. 582). The earliest brotherhood established at the convent in Strzelno in 1593, was the Brotherhood of Saint Anne<sup>11</sup> (Karczewski

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increase in the number of coins by skeletons in the post-medieval period is associated with the burial of lay people in temples and referred to as a symbolic offering, i.e. monetary grave good (Dzieduszyccy 2002, pp. 291–296).

<sup>7</sup> Pins inside coffins, are quite numerous finds in many graves. They were used to pin up grave clothes, pillows, ornaments etc.

<sup>8</sup> From the preserved skull and the damaged mandible, in the absence of the bones of the postcranial skeleton, it can only be assumed that it was a woman of *maturus-senilis* age, i.e. 35–60 or over 60 at the time of death (personal communication of T. Kozłowski).

<sup>9</sup> In the Benedictine monastery in Mogilno and in the Norbertine convent in Strzelno, in the 15<sup>th</sup>–16<sup>th</sup> centuries, the viscerocranium parts were lined with bricks (Sulkowska-Tuszyńska 2006, pp. 134–135, Fig. 149).

<sup>10</sup> The fabric on the side of the alleged letters had to be placed over the body. On the other side of the fabric, the remains of a wooden coffin lid have been preserved.

<sup>11</sup> Later, the brotherhood of the Most Holy Rosary (1726) and the Immaculate Conception of the Blessed Virgin Mary (about 1750) (Kabaciński 2001, pp. 62–67).

2000–2001, pp. 117–120)<sup>12</sup>. Both clergy and lay ones – men and women could be its members. If the identification of the scapular with a religious brotherhood is correct, the burial had to take place after 1593. The relatively low level of the coffin position and its shape indicate that it was placed between the very end of the 16<sup>th</sup> century and the end of the 17<sup>th</sup> century.

**The G-13/2001 burial** was located on the axis of the northern arm of the transept, opposite the entrance to the northern annex. The body of a young man, between 25 and 30 years old, was placed in a coffin at a depth of less than 1 m from the floor. The coffin rested on three floor tiles. On the knees of the deceased and outside the coffin, there were loose tiles from the floor damaged during grave digging. Flecks of white lime were visible on the pelvis. It should be emphasised that the custom of sprinkling the bodies with lime was not only associated with the plague period, but it was commonly used in the post-medieval period to disinfect corpses.

It is known from written sources that next to this burial, in the so-called vault under the great Holy Cross altar, nuns and priests were buried, while in the crypts under the chapels of the church, wealthier lay people (Kabaciński 2001, p. 67). If it was a layperson, it must have been in prominence to the convent. The dating of the burial can be described in broad terms for the 17<sup>th</sup> and 18<sup>th</sup> centuries.

In the burial marked as **G-19/2001**, a deceased child at the age of 9–12 was discovered<sup>13</sup>. The body was placed in a wooden, non-decorated coffin with a flat lid (depth +109.60 to +109.44 m) and buried under the floor, in the northern transept (trench W-13, 13a/01), at the apse and *ossuarium*, on the eastern side of the base of the Holy Cross altar. In this grave, only the lower part of the skeleton was unearthed *in situ*, as the upper part was destroyed by a trench for a mass grave. The bone tissue was badly damaged due to the presence of lime, which was poured out into the burial pit. Inside the coffin occurred accidentally a 3.5 cm thick ceramic tile and a fragment of a ceramic plate with green glaze. Based on the depth of the coffin, correlation with the closest burials and technological features of the ceramics, the grave G-19/2001 can be dated to the first half of the 18<sup>th</sup> century. The presence of children's graves, next to adults, inside the monastery church, where members of the convent were usually buried, confirms the thesis that children's coffins were brought to the monastery to be buried among people who kept 'angelic purity' (Borkowska 1996, p. 233). Tiny children were often buried very close to the altars, in the chancel part of the church. These children could have come from noble and

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<sup>12</sup> The statute of the brotherhood of Saint Anne states that 'as a sign of this association, everyone will wear a round gold, silver or at will pendant on a string or chain or on a taffeta' (Karczewski 2000–2001, p. 125).

<sup>13</sup> This is so-called morphological age, determined based on the bone dimensions. Only tibia, fibula, foot bones and two vertebrae remained *in situ*.

magnate families befriended with the monastery, which is indirectly confirmed by the distinctive furnishings of their coffins (Sulkowska-Tuszyńska 2016, pp. 129–132, Figs. 2, 3).

### *Methods of organic remains examination*

Seven samples containing amorphous organic material or plant debris visible to the naked eye, collected by archaeologists during the excavation works, were examined (Table 1). The subject of the research was mainly plant macroremains; fauna data are selective, while pollen analysis was used to support the analysis of problematic macroscopic material.

Table 1. The list of samples from burials in the Basilica of the Holy Trinity in Strzelno

Sample no.	Inventory no.	Trench/ /section	Burial	Layer	Collection date	Comment
1	17/2000	16/2000	G3/2000		30.09.2000	flowers
2	21/2000				30.10.2000	plant remains
3	146/2001 sample 4	10/2001	G11/2001	VIII	02.06.2001	pillow infill
4	146/2001 sample 6			VIII	02.06.2001	organic matter
5	152/2001	11/2001	G13/2001	V	05.06.2001	sand with admixture of organic matter
6	154/2001			VI	06.06.2001	plant remains
7	241/2001	13a/2001	G19/2001	IV	30.06.2001	fruit stones

The content of the samples was analysed as a whole. Macroscopic remains were dry segregated under a stereoscopic microscope at 16x magnification, and then determined using magnifications up to 60x. The taxonomic identification of plant remains was made using specialised keys and atlases (including Marek 1954; Kac *et al.* 1965; Jacquat 1988) as well as herbarium materials and carpological collection (CRefColl-UGDA) stored in the Laboratory of Palaeoecology and Archaeobotany (Department of Plant Ecology) at the University of Gdańsk. In the case of two samples (No. 17/00 and No. 152/01), pollen was additionally analysed. For this purpose, the samples were macerated according to the procedure used in pollen analysis (Faegri, Iversen 1989). The samples were boiled in 10% KOH, then acetolysis was applied and the resulting material was embedded in glycerine. Slides were inspected at 400x magnification and the identification was confronted with a palynological reference collection (PRefColl-UGDA).

*Results of analyses and their interpretation*

In the examined samples, a total of thirteen plant taxa, one insect species and numerous fungal remains were found (Table 2).

**The G-3/2000 burial.** In the material collected from this grave, there were numerous chestnut flowers (Fig. 2: a). In central Poland, *Aesculus hippocastanum* L. – horse chestnut – blooms in May (Szafer *et al.* 1967, p. 417). This species is native to the Balkans. It has been known as a decorative tree in Central Europe, including Poland, since the 16<sup>th</sup> century (Tokarska-Guzik *et al.* 2012, p. 110). Krzysztof Kluk described a number of ways to use fruit, seeds, wood and chestnut bark in medicine, cuisine and crafts (Kluk 1805, pp. 10–11). It can be assumed that at least one inflorescence was inserted into the coffin, which was probably meant to emphasise the importance of the deceased. At that time, chestnut trees were very rare in Poland and they were only planted in gardens and parks. This tree might have grown in the monastery garden, in the park by the provost's court or in a secular estate; it was certainly not widely available<sup>14</sup>.

The second species found in this grave is *Raphanus raphanistrum* L. – wild radish. It is a common weed that blooms in May and June; in the lower parts of the inflorescences, already while flowering, fruits – siliquae gradually ripen. The remains that were found were the fragments of the siliquae (Fig. 2: b). The dimensions of the two more complete examples are 4.8 x 2.7 mm and 4.5 x 2.6 mm. We may suppose that wild radish was placed into the coffin to mask the smell of decaying body awaiting burial<sup>15</sup>. Modern research also shows that the seeds of this species have a strong antiseptic effect by inhibiting the growth of both gram-positive and gram-negative bacteria, and thus slowing down the decomposition processes (Iyda *et al.* 2019).

The presence of horse chestnut flowers indicates that the burial took place in May, and the co-occurrence of wild radish fruits suggests that the date was associated with the end of that month rather than with its beginning. The review of documents concerning the Strzelno provosts who ruled the monastery in the middle of the 18<sup>th</sup> century and who died at the end of spring shows that the grave may contain the remains of Mikołaj Ignacy Łukowski, the coat of arms of Dołęga, elected provost in 1728, and who died in Strzelno on April 24, 1736 (Kabaciński, Karczewski 1997, pp. 31–32). The validity of this hypothesis is strengthened by the location of the burial in an eminently privileged place in the basilica.

<sup>14</sup> To this day, on the south side of the Basilica of the Holy Trinity, in the area of the former cemetery, mighty chestnut trees grow.

<sup>15</sup> It should be remembered that the funeral ceremonies preceding burials of exceptional people, especially in the Baroque period, extended to several days or even several weeks (e.g. Rożek 1977).



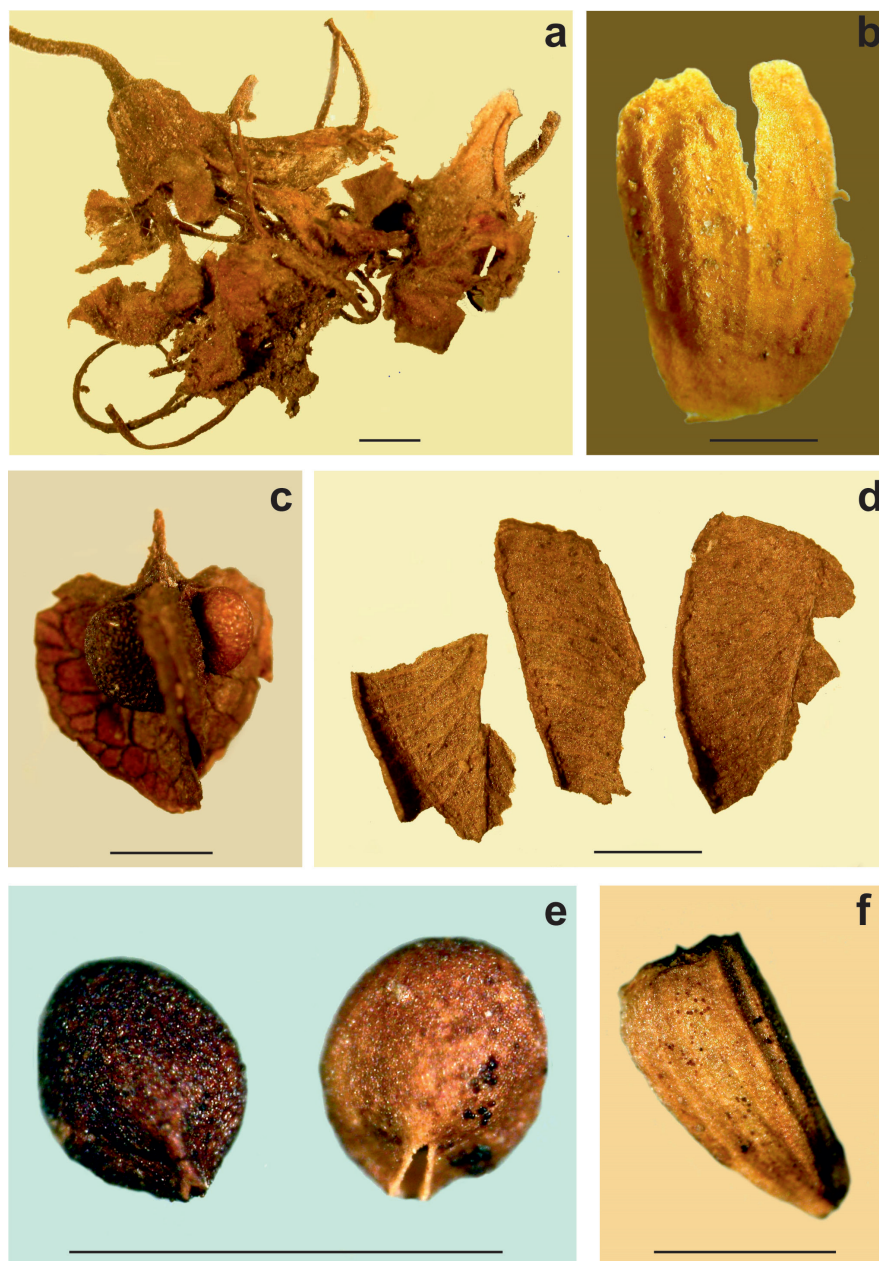


Fig. 2. Plant remains from burials in the Basilica of the Holy Trinity in Strzelno: a – flowers of *Aesculus hippocastanum* (G-3/2000); b – fragment of silique of *Raphanus raphanistrum* (G-3/2000); c – *Rumex crispus* fruit, enclosed in perianth leaves (G-11/2001); d – leaves fragments of *Pteridium aquilinum* (G-11/2001); e – fruits of *Origanum vulgare* (G 11/2001), f – fruits of *Cichorium intybus* (G-11/2001); the scale means 1 mm (photo by M. Latałowa)



Table 2. Plant and faunal remains in the samples from burials in the Basilica of the Holy Trinity in Strzelno

Sample no.	Inventory no.	Burial	List of taxa	Number and a kind of remains
1	17/2000	G-3/2000	<i>Aesculus hippocastanum</i> L. (horse chestnut)	Numerous flowers and pollen
2	21/2000		<i>Raphanus raphanistrum</i> L. (wild radish)	Fruits (siliqua): 2 halves+ 6 smaller fragments
3	146/2001-4	G-11/2001	<i>Rumex crispus</i> L. (curly sprel)	1300 fruits
			<i>Pteridium aquilinum</i> (L.) Kuhn (bracken)	176 fragments of leaves
			<i>Origanum vulgare</i> L. (oregano)	87 fruits
			<i>Cichorium intybus</i> L. (chicory)	6 fruits
			<i>Carum carvi</i> L. (caraway)	1 fruit
			Apiaceae indet. Parsley family	1 fruit
			cf. <i>Blysmus compressus</i> (cf. flat-sedge)	1 fruit
			Fungi indet.	12 sclerotia and numerous fruiting bodies of Ascomycetes
			<i>Fannia canicularis</i> (Linnaeus)* (lesser housefly)	141 remains of pupparia
4	146/2001-6		<i>Fannia canicularis</i> (Linnaeus)* (lesser housefly)	Numerous remains of pupparia
5	152/2001	G-13/2001	<i>Betula alba</i> -type (birch)	Scattered pollen grains
			Fungi indet.	Numerous fragments of microscopic mycelium, spores and sclerotia
6	154/2001		<i>Panicum miliaceum</i> L. (millet)	516 glumes
			<i>Echinochloa-crus galli</i> L. (barnyard grass)	2 spikelets
7	241/2001	G-19/2001	<i>Persica vulgaris</i> Mill. (peach)	1 stone+6 fragments

\* The determination was confirmed by Dr Elżbieta Kaczorowska from the Department of Invertebrate Zoology and Parasitology at the University of Gdańsk.

**The G-11/2001 burial.** The analysis of the botanical material extracted from the pillow placed under the deceased's head showed the presence of five species of well-known useful plants collected mainly from the wild, used both in the old cuisine and in folk medicine. Some of them were believed to have magical effects.

The most abundant fruits were of *Rumex crispus* L. – curly sorrel – with the accompanying perianth elements (Fig. 2: c), and it can be assumed that these are the remains of larger fragments of these plants that have decayed. This species of sorrel is a common weed. During times of crop failure, its dried fruit was ground and used as flour. The leaves were used instead of tobacco, while the decoction of the roots was used in the treatment of diarrhoea, leprosy and jaundice, and for the care of farm animals in various diseases (Kluk 1811, p. 36). Modern research indicates phytochemical properties of this species that could have been of particular importance in the context of burial. Extracts from both its fruit and leaves show a strong antioxidant and antibacterial effect, inhibit the development of fungi and other parasitic and saprophytic organisms (Coruh *et al.* 2008; Wegiera *et al.* 2011; Idris *et al.* 2019). Thus, the presence of curly sorrel as a filler for the coffin pillow had an influence on a slower pace of decomposition of the corpse.

A similar role was played by the leaves of bracken – *Pteridium aquilinum* (L.) Kuhn, which was the second most numerous species in this sample. In the discussed material, characteristic fragments of leaves of this fern were found (Fig. 2: c, d). It commonly grows on the edges of forests and in the clearings, especially on lighter soils. It was probably already in the Mesolithic that its rhizomes, rich in starch, were gathered for consumption (Hegi 1964; Göransson 1986). In historical times, rhizomes were boiled as an additive for pigs' fodder, and in folk medicine it was used against worms (tapeworm) and as an effective agent in the control of bedbugs. Bracken was also used in craft, for example in the tanning of leather, or as an admixture in the production of glass (Kluk 1808, p. 241). However, in the context of the function of the examined feature, the basic value was the antibacterial and antifungal properties of numerous chemical compounds present in the leaves of this species, which have long been used as a preservative (Fischer-Rizzi 1996, pp. 190, 195; Awe, Amobi 2015).

The fruits of *Origanum vulgare* L. – oregano (Fig. 2: e) – were numerous in this feature. It is an aromatic plant, which, due to its sharp spicy taste, was used as a beer additive, and has many application in kitchen. Oregano decoction was used as a medicine for a number of diseases, and baths in infusions of this herb were recommended for asthma, jaundice and female diseases. Its pungent smell was used in the fight against bugs, for example to drive out ants (Kluk 1808). According to ethnobotanical sources from the 17<sup>th</sup> and 18<sup>th</sup> centuries cited in Adam Fisher's dictionary<sup>16</sup>, oregano was considered a magical plant that protected against

<sup>16</sup> Adam Robert Fischer (1889–1943) was a researcher in the field of ethnology and folklore. His

witchcraft (Kujawska *et al.* 2016, p. 215). The use of this plant in a funeral context was probably associated with its bioactive phytochemical components. Oregano herb is characterised by the presence of antioxidant and antibacterial compounds (Veenstra, Johnson 2019), as well as aromatic oils, which are distinguished not only by their intense smell, but at the same time are an excellent insect repellent (Sharififard *et al.* 2018, pp. 388, 390). Including oregano in the composition of plants filling the pillow slowed down the pace of decomposition processes, masked the unpleasant smell and limited the invasion of insects near the deceased. The benefits of this species for burial purposes were well known, which is documented both by ethnobotanical data based on the 19<sup>th</sup>-century questionnaires by Józef Rostafiński<sup>17</sup> (Köhler 2017, p. 46) and the results of archaeobotanical research. Oregano appeared in significant numbers, as a dominant or co-dominant element, among the remains of plants filling coffin pillows in post-medieval graves in Przemyśl and Końskowola (Pińska *et al.* 2015) and in Gniew (Sady 2015). It was found, *inter alia*, among sepulchral species discovered in Jasna Góra crypts (Galera *et al.* 2013, p. 6), as well as in the 18<sup>th</sup>-century princely burials in Saarbrücken (Germany) (Rosinski 2007, pp. 146–149). *Origanum vulgare* is listed among the ingredients used for embalming bodies in Italy and France (Corbineau *et al.* 2018, p. 161).

The fruits of *Cichorium intybus* L. – the chicory (Fig. 2: f) – were found in a small number, but also in this case we are dealing with the remains of a deliberately gathered plant. It is a common weed which is also an important utility plant with a wide range of applications. It was gathered for food and medicinal purposes. The leaves were used in salads. The roots were cooked as a meat condiment, and the chopped and dried roots were roasted and used in place of coffee. They could be stored in cellars longer, buried in the sand. In folk medicine, chicory was used to make expectorant drugs for diseases of the stomach, liver, spleen, kidneys, against fever and effective in the treatment of jaundice (Kluk 1805, pp. 126–127). It was also believed to have magical properties – gathered during flowering and hung on the wall of a house was supposed to prevent epidemics. As in the case of the aforementioned species, modern studies of the chemical composition of chicory indicate that it produces a long list of bioactive chemical compounds with antioxidant, antibacterial and anthelmintic properties (Street *et al.* 2013), therefore important in the discussed context.

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scientific legacy includes rich archive materials for the first part of ‘Słownik słowiańskich wierzeń i zwyczajów ludowych’, which, however, was never completed. Currently, these materials are the subject of further studies (Kujawska *et al.* 2016).

<sup>17</sup> Józef Rostafiński (1850–1929) was an outstanding naturalist whose scientific activity concerned a wide range of botanical issues. He was interested, *inter alia*, in ethnobotany, including the importance of plants in folk beliefs and religious rituals. The archival questionnaires from 1883, on which J. Rostafiński based part of his research, are currently under further analyses.

In the studied sample, only one unripe fruit of *Carum carvi* L. – caraway – was found (Fig. 3: a), but its presence also proves the deliberate selection of species found in the pillow. Caraway, especially its fruits containing strong aromatic oils, was widely used for many centuries, not only as a spice, but also as an ingredient in medicines, especially to improve digestion (Raaijmakers *et al.* 2012). Their antibacterial and antifungal properties, which were used to preserve food products, have also been valued for a long time (Kluk 1805, p. 111).

The botanical composition of the G-11/2001 burial pillow filling indicates the deliberate selection of plants, mainly due to their properties that delay the decomposition process and the presence of essential oils with an intense smell, as well as acting as repellents. According to ethnographic data, in the 19<sup>th</sup> and 20<sup>th</sup> centuries, especially in the southern regions of Poland, it was customary to place the head of the deceased on a special pillow filled with holy herbs, especially blessed in the octave of Corpus Christi (June) or the Assumption Day (August 15) and held throughout the year (Paluch 1988; Bohdanowicz 1999, p. 101; Skonieczna-Gawlik 2015; Kujawska *et al.* 2016; Köhler 2017). From the dried wreaths and bouquets, plants were drawn that were believed to have special power under certain circumstances. They were supposed to protect people and animals from diseases or support their treatment, bring mild death, protect against lightning strikes and drive away ‘evil powers’, both from the living and the dead (Paluch 1985; 1988; Łuczaj 2012; Köhler 2016). Whole bouquets or only certain species were put into pillows or under the head of the deceased. The composition of the herbs found in the pillow from the Strzelno burial suggests that also in this case plants from blessed bouquets could be the filling element. Ripe seeds/fruits of oregano, chicory and sorrel indicate that the plants were gathered in the summer months, so the material in question may rather come from bouquets blessed on the day of the Assumption.

Among the organic remains, present both in the pillow material and in the sample collected at the skeleton deposition place, a very large number of *Fannia canicularis* (Linnaeus) lesser housefly<sup>18</sup> pupae cocoons were found (Fig. 3: b). It is a common species accompanying human settlements, whose activity and reproductive phase occur in summer. In the summer temperatures in Central Europe, the full life cycle (from laying eggs by the fly, through subsequent larval phases, the pupal stage, to the release of adult individuals) is completed in about 30 days (Grzywacz 2019, p. 19). The larvae, with characteristic outgrowths and spines, live on decaying organic matter of various origins and are also a characteristic element of the corpse’s entomofauna (Kaczorowska, Draber-Mońko

<sup>18</sup> The determination was confirmed by Dr Elżbieta Kaczorowska from the Department of Invertebrate Zoology and Parasitology at the University of Gdańsk.

2014, pp. 44–45, 85). Forensic entomology data suggest that *Fannia canicularis* can lay eggs on cadavers as early as in a few days, but its presence is particularly characteristic of the later stages of decomposition. It is also one of the species of flies that cause the so-called facultative myoses (Francesconi, Lupi 2012, pp. 83, 95–96). This dangerous disease is infection by maggots, which then develops inside the body, primarily in the genitourinary system and the intestines, but can also develop in the ears and other organs. It is a disease associated with improper hygienic conditions, still relatively common in Third World countries, but its cases are also known from Europe (Brehm 1968; Piotrowski 1999, pp. 70–73). In the past, it probably occurred quite often in Poland, so there is a certain probability that the deceased suffered from myosis.

The state of ripeness of herbs filling the pillow (fruits and seeds of species that ripe mainly in the second half of summer) and the presence of *Fannia canicularis* pupae remains narrow down the date of burial. It probably took place in late summer or early autumn, before the resting period of this species of fly. The presence of numerous, abandoned cocoons of *Fannia canicularis* pupae and the complete absence of adult insects' remains indicate that these flies had access to the body prior to burial and managed to complete the full life cycle before the coffin was finally closed. This suggests a period of at least one month between death and the funeral of the deceased.

**The G-13/2001 burial.** On the right and left side of the skeleton, in the entire unearthed part of the coffin, a strip of densely lying glumes of millet *Panicum miliaceum* L. (Fig. 3: d) has been preserved. Apart from millet, two spikelets of the barnyard grass *Echinochloa crus-galli* (L.) P.B. were found in the sample. The barnyard grass (Fig. 3: c) is a common weed, found e.g. in millet cultivation.

The custom of placing grain in a coffin, once common, has survived to the present day in a few places where it is associated with burials of farmers (Bohdanowicz 1999, p. 102). The author cites various motives that justified the placing of grain in coffins of farmers. One of them is related to proper furnishing of the deceased 'so that after death he can still farm', or 'that he may have bread in afterlife'. According to others, the grain in the coffin should prevent farmer from returning 'for his goods'. The fact that millet was placed in the coffin probably resulted from the widespread use of this grain by rural population. Even at the end of the 19<sup>th</sup> century, in the Polish countryside, millet groats played a key role in both the daily and festive menu (Bohdanowicz 1996, p. 52). On the other hand, the fact that millet groats was also a traditional dish associated with All Souls' Day, and therefore a ritual related to death, may also have some significance. In many regions of Poland, on that day, peasants brought to the church and to the cemetery, among others, millet groats, which they offered to beggars (Jankowska 1999, p. 170). It should be emphasised that the deceased could have been a Kuyavia nobleman – a person particularly respected and merited



Fig. 3. Plant remains from burials in the Basilica of the Holy Trinity in Strzelno: a – unripe fruit of *Carum carvi* (G-11/2001); b – *Fannia canicularis* cocoons from burial G-11/2001; c – spikelet of *Echinochloa crus-galli* (G-13/2001); d – *Panicum miliaceum* glumes (G-13/2001); e – *Persica vulgaris* fruit stone (G-19/2001); the scale means 1 mm (photo by M. Latałowa)

for the monastery<sup>19</sup>; peasants were generally not buried in churches basements (Kuchowicz 1975). The graves of the members of the convent and of the laity, dug next to each other, confirm the conclusions of Philip Ariès that the sacred

<sup>19</sup> In Przeczno near Toruń, a book of the dead (*Liber mortuorum*) has been preserved in the church archives. The records for the years 1752–1756 and 1774–1779 show that the local parish priest and noblemen were buried in a small village church, while servants, peasants, sheep shepherds, cottage workers and children were buried in the cemetery. The lords were buried in a special crypt, in the presbytery (Sulkowska-Tuszyńska 2019, pp. 291–292 ff.).



space until the end of the 18<sup>th</sup> century was intended not only for the monastic order; it was also used by exceptional lay people (Ariès 1992, pp. 88, 96, 97 ff.)<sup>20</sup>.

A sample of soil taken from inside the grave was also analysed. There were no determinable macroscopic remains, while microscopic analysis revealed the presence of a small amount of birch pollen. Theoretically, the origin of pollen in this type of sample may have different sources and very different ages. This material may come from the ground in the place where the coffin is placed, or from the soil that was used for its backfilling. The source of pollen may also be various items placed in the coffin during the funeral. Also, contamination of the sample with modern pollen during archaeological exploration cannot be ruled out. In the case in question, the homogeneous taxonomic composition of the pollen spectrum may provide some indication. If the pollen came from the surrounding substrate or from the soil used to bury the coffin, it should have a more varied composition, because there is no reason why pollen of one species should be selectively preserved in this type of material. The spectrum contaminated with modern pollen during excavations would also have a more diversified composition. The sample was collected at the beginning of June (June 5, 2001), i.e. during the pollen season of many plant species, including grasses, but after the pollen season of birch, which in Poland falls in April, exceptionally in May (Latałowa *et al.* 2002, p. 35; Nowosad *et al.* 2015, pp. 164–165). Therefore, the hypothesis remains that we are dealing with pollen present in the atmosphere during the exposure of the body before the funeral. It is worth noting that the pollen season of birch is not only characterised by a high concentration of pollen in the atmosphere, but also often it precedes the pollen season of other April tree species, as a result of which its pollen may absolutely dominate in the environment. With great caution, it can therefore be suggested that in this case the presence of birch pollen points to April as the probable burial period.

**The G-19/2001 burial.** In the child's burial, one complete specimen and six smaller pieces of peach *Persica vulgaris* Mill. stones (Fig. 3: e) were found. The stone was small (2.3 x 1.3 mm), irregular, with a relatively thin shell. The remaining fragments had similar features. They indicate that the fruits placed in the coffin were not fully ripe. This could either be due to their premature harvest or unfavourable cultivation conditions. Peaches cultivated in Poland probably did not produce good fruit in colder years. According to K. Kluk, the varieties cultivated in Poland in the 18<sup>th</sup> century ripened between the end of August and the middle of September, hence the burial date must have fallen to this period (Kluk 1805, pp. 31–32). Placing the peach fruit in the child's coffin was probably symbolic. Among the meanings that the peach fruit was supposed to symbolise in various cultures, the Christian virtues of inner life and the symbol of Christ are mentioned (Brišová 2019, p. 28).

<sup>20</sup> Such a conclusion is also confirmed by other, clearly secular burials unearthed in the aisles of the basilica, recognizable by jewellery found in coffins (Sulkowska-Tuszyńska 2010, p. 419 ff.).

### Conclusions

The results of the analysis of plant remains and selected faunal data from the burials in the Basilica of the Holy Trinity at the Norbertine convent in Strzelno brought a lot of interesting information about local funeral customs in the 17<sup>th</sup> and 18<sup>th</sup> centuries, significantly enriching the data obtained by archaeologists. The plants that were part of the coffin furnishings had various functions – practical, decorative and symbolic. Certainly, a mainly practical aspect was behind the set of species found in the coffin pillow of a person whose funeral must have taken place at a time far from death (burial G-11/2001). Species have been used here known for their preservative properties, the value of which is confirmed by the results of modern phytochemical studies quoted above. Some of these species are additionally characterised by presence of strong essential oils, which, at least in part, reduced the unpleasant smell of death. The oils contained in the oregano were also supposed to scare away insects. In turn, chestnut inflorescences placed in the coffin of a church dignitary were undoubtedly ornamental (burial G-3/2000).

Plants accompanying burials often have a symbolic meaning (Bohdanowicz 1999, pp. 100–103; Dafni *et al.* 2020, pp. 337, 341–342). Good examples are both the presence of a layer of millet along the body of a young man (burial G-13/2001), which indicates that this is a ‘magic procedure’ used in the burial of farmers, and the placement of peaches in a children’s burial (burial of G-19/2001). If our hypothesis on the possibility of the origin of the herbs placed in the pillow (burial G-11/2001) from bouquet blessed on the Assumption is correct, also in this case the belief in the supernatural properties of the blessed plants was of importance.

The results of the analyses presented in this work provided strong premises for determining the approximate timing of the examined burials. The presence of chestnut flowers in the G-3/2000 burial points to May as a potential burial period. Taking into account its location and furnishing, as well as the date of death of the Strzelno provost, M. I. Łukowski at the end of April 1736 found in the documents, it is very likely that this burial would be associated with a specific person. Botanical data, especially faunal evidence, indicate that the woman buried in the grave G-11/2001, presumably died in the second half of summer, and her body waited for the funeral for at least a month. In turn, the results of the pollen analysis of the sample from the grave G-13/2001 suggest April as the probable date of death/ /funeral of the man buried there. The fact that peaches were placed in child’s grave (G-19/2021) also clearly points to late summer or early autumn as a time of the burial.

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