

EDITORIAL

Oilseed rape and seasonal symptoms

Each May, as the fields of Britain turn yellow with the flowering of oilseed rape, the newspapers and radio report the misery endured by sufferers of oilseed rape allergy. People whose homes are surrounded by the crop write to their MPs and questions are asked in Parliament. But doctors referred patients with the condition often fail to find evidence of allergy. What is going on?

Oilseed rape is not a new crop and earliest reports of its cultivation date back to ancient times. It was first brought to the UK by Flemish settlers and first references to its use are in the late 16th century when it was grown mainly for reclamation purposes in the fenlands. It is a member of the *Brassica* family, which includes cabbages and turnips, and has acquired a new lease of agricultural life as a result of European Community subsidies since 1973. The oil, which comprises about 40% of the seed, is extracted by crushing, leaving a high protein residue that can be used for animal feed. The oil is refined and has many uses. It has been marketed as a cooking oil in the UK since 1984, having a very low content of saturated fats. It can be converted into rape methyl ester, a form of biodiesel that may have environmental advantages in that it is said to produce relatively low concentrations of carbon particles when burned. It is already being used in some bus fleets and it is reasonable to anticipate a greater use in this field if its environmental claims are borne out. Finally, it is used in industry as a gear lubricant and a drilling fluid. The plant is well suited to the climate of northern Europe and it is possible to grow two crops in a season, planting in winter and spring. In the UK in 1993, no fewer than 410 000 Ha were cultivated and the yellow flowers are visible from May through July. In many cases the fields may be seen to be in flower very close to communities, and if the plant is a cause of ill health it needs to be taken seriously.

Although there have been reports of allergy to oilseed rape [1,2], the initial suspicion that rape is an important direct cause of allergy has now largely been discounted [3–5]. The plant is mainly insect-pollinated and few pollen grains can be detected outwith the immediate vicinity of the field. The occasional cases of allergy that have been reported have been in people working in very close proximity to the plant, as in agricultural laboratories. We have yet to see a farmer with allergy to the plant, although allergies to other substances in their working environment are not uncommon. Our own studies have shown a very small excess of cough, wheeze/shortness of breath and headache during the

Spring months in people living in an oilseed rape area [5]. Our more recent studies, as yet unpublished, have shown that people complaining of symptoms from rape allergy are more likely than controls to be atopic, but only rarely have positive skin tests or radioallergosorbent tests (RAST) to the plant; those that do have also invariably been allergic to grass pollen.

If there is so little clinical or epidemiological evidence of allergy and asthma, what is the reason for all the complaints? It has been suggested informally that as the crop is so visible people simply blame it for their usual hay fever. However, this seems to us to be unlikely. Careful history-taking from patients has shown there to be a consistent pattern of complaints. The symptoms usually are of nasal and eye irritation, starting almost immediately the sufferer comes into proximity to a field, and usually settling down within minutes of moving away. People with hay fever or asthma say that going past a field will make their symptoms worse or sometimes bring on an attack. Thus, the complaints are of an irritant rather than of an allergic syndrome. These clinical observations have been supported by our epidemiological studies, the main symptoms reported by people with seasonal symptoms in case-control studies being nasal and eye irritation and headache. Such subjects do show an increase in bronchial reactivity during the season, though whether this is due to the plant or their seasonal allergy is unclear; the latter seems more likely.

A report in this issue of the Journal [6] confirms the observations of several other groups [7,8] that oilseed rape produces a multitude of volatile organic chemicals, particularly terpenes. We originally suggested that such substances, being irritant, and in very occasional cases probably allergenic [9], might be responsible for the symptoms complained of. These natural chemicals do, of course, have a biological role, in attracting pollinating insects and in fighting pathogenic organisms. Their smell is obvious to anyone who has been near a field of rape, and it is very likely that they or their photochemical derivatives do act as irritants to susceptible people. They will also be precursors of ozone, though this reaction is a relatively slow one and any ozone generated is unlikely to be responsible for symptoms close to the site of cultivation.

The positive results of studies to date are as follows: oilseed rape produces potentially irritant chemicals during the flowering season, but relatively little of its pollen becomes airborne; a small excess of cough,

wheeze/shortness of breath and of headache has been found in oilseed rape areas during the season; people complaining of symptoms are more likely than controls to be atopic but are rarely allergic to oilseed rape; and clinical observations strongly suggest that the symptoms are usually irritant rather than allergic.

Having made these points, we do not believe that the matter is closed. From a practical point of view, the symptoms that people complain of are genuine and are of real concern when they persist because the individual lives or works very close to a field of oilseed rape. People with asthma in such circumstances are likely to be affected and their symptoms exacerbated. There is, in our view, a case to be made for asking farmers to avoid planting the crop close to houses, schools and other places where people will spend much of the day. The anecdotal evidence suggests that this distance need not be more than 20 m or so to prevent most of the problems. From a scientific point of view, the relationship between irritancy and allergy is intriguing. The majority of our subjects with typical seasonal symptoms and grass pollen allergy said that their symptoms only started after they were first exposed to oilseed rape. While again this is anecdotal, we believe that it should not be discounted. The concept that exposure to industrial and urban pollution may increase the risks of allergic sensitization is gaining currency [10], and there is now fairly strong evidence that cigarette smoke has this effect [11]. It is at least possible that oilseed rape, and indeed other plants, such as pine trees, that produce irritant chemicals, may have a similar effect. The seasonal coincidence of tree and grass pollens with the volatile organics produced by oilseed rape and other plants may prove to be a factor in our observation that about a third of people in country districts, whether or not in an oilseed rape area, report seasonal symptoms [5]. This problem may not be life-threatening, but the effect may well be important in terms of general misery and the burden of work in rural general practice, thus justifying further investigation.

References

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