Table 1 *Statistical analysis of D. similis and D. cephalata under experimental conditions*

Name of species	Head length	Head width	Total length	Head per carapace ratio
D. similis	$P < 0.01$*	$P < 0.01$*	$P < 0.005$**	$P > 0.5$***
D. cephalata	$P < 0.0025$**	$P < 0.05$*	$P < 0.01$*	$P > 0.05$*

*Significant; **Highly significant; ***Not significant.

explanation for the larger clutch size in *D. similis* may be the allocation of more energy towards reproduction whereas, in helmeted *D. cephalata* part of the absorbed energy is used mainly for producing a larger helmet. This larger helmeted forms can easily evade predation by *A. bouvieri*[17]. The same type of energy allocation as found in the present study is also observed in helmeted and non-helmeted *D. galeata*[18] and in *D. retricurva*[19].

In the present study, temperature, food and other physico-chemical parameters were kept constant and the only variable was the extract of the predator. The extract-induced head length and head width are greater in *D. cephalata* than in *D. similis*. From the results it appears that the extract of *A. bouvieri* has an effect on *D. cephalata* in producing a helmet when compared to *D. similis* under laboratory conditions. The helmet of *D. cephalata* and other helmeted forms of *Daphnia* acts as an antipredator device[17, 20–22] by which the helmeted forms can easily escape from the invertebrate predators. The round-headed forms are more susceptible to *A. bouvieri* predation[16, 23]. Because of predation pressure these round-headed forms tend to increase their population by producing more eggs (figure 1), as found in the present study. Similar increase has been reported earlier in *D. retrocurva*[17].

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EFFECT OF pH ON HORMOGONE FORMATION

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HORMOGONES are small pieces of trichome with one or more uniform cells, and are usually enclosed by a

delicate sheath which may not easily be perceptible at times. Hormogone formation is the common mode of propagation. The formation of hormogone is generally by the death of one or more cells of the trichome or by the special biconcave separating discs. In the family Oscillatoriaceae any portion of the trichome may get detached and start behaving as hormogone[1].

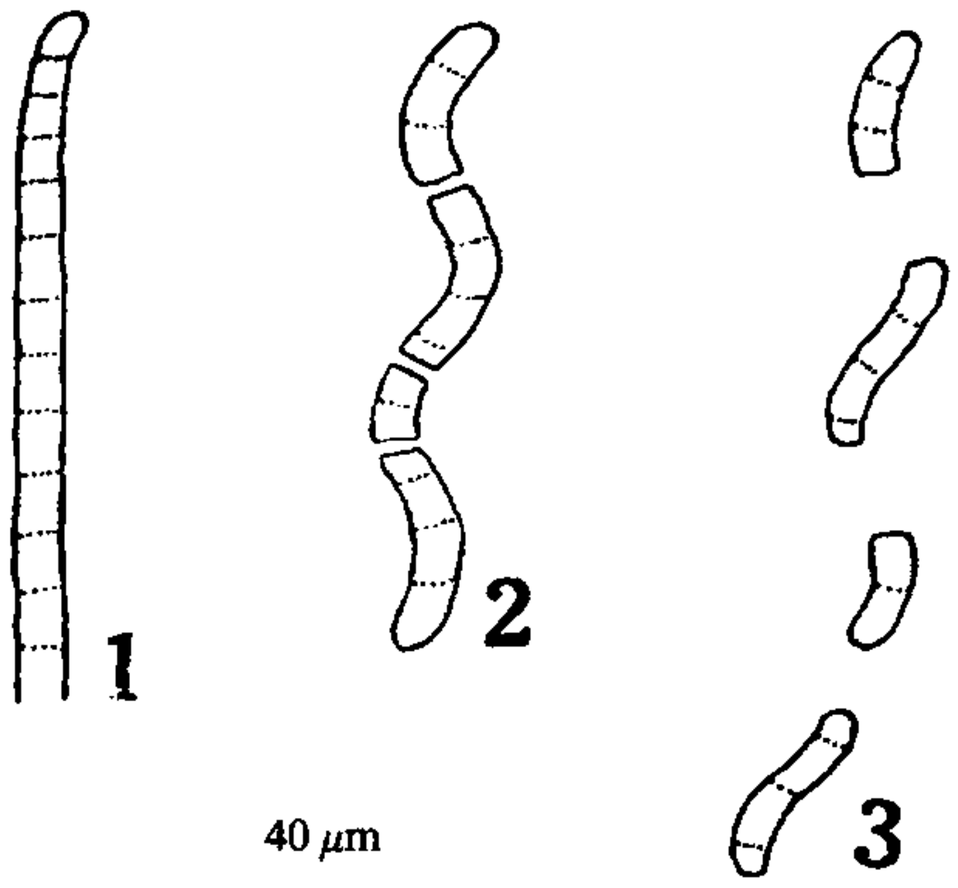
In the present communication, the effect of pH in the hormogone formation in a species of *Oscillatoria* was studied in some detail.

The plants of *Oscillatoria* were collected from a freshwater permanent tank of our Department, during October–November 1983. A number of slides of this material were prepared in the pond water (pH 6.9) and observed in the living state under light microscope. No change in the morphology of the trichomes could be observed for 30 min.

Subsequently three slides prepared in double-distilled water again showed no change in the morphology of the trichomes.

When the slides were prepared in tap water (pH = 7.9) a quick breaking of the trichomes into typical hormogones occurred (after 2–5 min.) in a zig-zag fashion (figures 1–3). The experiment was repeated for several days and similar results were obtained.

The plants of *Oscillatoria* were finally identified as *O. chlorina* Kuetz *ex* Gomont[1] with the following dimensions: length of the cells, 3.7–8.0 μm; breadth of the cell, 3.5–4.0 μm.



Figures 1–3. *Oscillatoria chlorina* Kuetz *ex* Gomont. **1.** Trichome with normal morphology, **2.** Initiation of the breaking of trichome into a few celled hormogones, and **3.** Formation and separation of hormogones in zig-zag fashion.

The common mode of hormogone formation is either by the death of one or more intercalary cells or by the formation of biconcave intercalary separating discs. In this case, such structures were altogether lacking and only the sudden and spontaneous breaking of trichomes in a zig-zag fashion was observed. Possibly the abstricting of trichomes would have been facilitated by the higher pH of the tap water, (7.9) as compared to that of pond water (6.9) while the pH of glass double-distilled water was 7.1.

To ensure the phenomenon of breaking of trichome and hormogone formation, different buffers were also prepared and it was observed that high pH was responsible for the breaking up of the trichomes into hormogones.

Gonzalves and Kamat[2] described a new method of hormogone formation in *Aulosira implexa* Born *et* Flah var *crassa* Dixit. They observed a break in sheath on one side followed by fragmentation of trichome as a possible method in the formation of hormogone. Perhaps the breaking of sheath would have been possible due to change in pH, which could have been overlooked.

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STRUCTURE AND HISTOCHEMISTRY OF RAPHIDE IDIOBLASTS IN *APOSTASIA WALLICHII* (R. Br)

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THE genus *Apostasia* comprises six species of terrestrial herbs distributed in India, Malaysia and Australia and reveals unusual floral structures that separate it from other orchids[1]. *Apostasia* belongs to the diandrae and meagre information is available on its histological and embryological details[2]. In *A. wallichii* the leaves are linear to lanceolate, inflorescence a panicle, bracts subulate and flowers yellowish-white in hue. The perianth consists of two whorls—the first